



SOVIET NAVAL DEVELOPMENTS

Edited by **NORMAN POLMAR**

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America's leading expert on the Soviet Navy describes the evolution of Russia's high seas fleet in an economical, dispassionate, and articulate analysis, which is illustrated with more than 110 photographs and 60 silhouettes of warships. Many of these illustrations are being published for the first time.

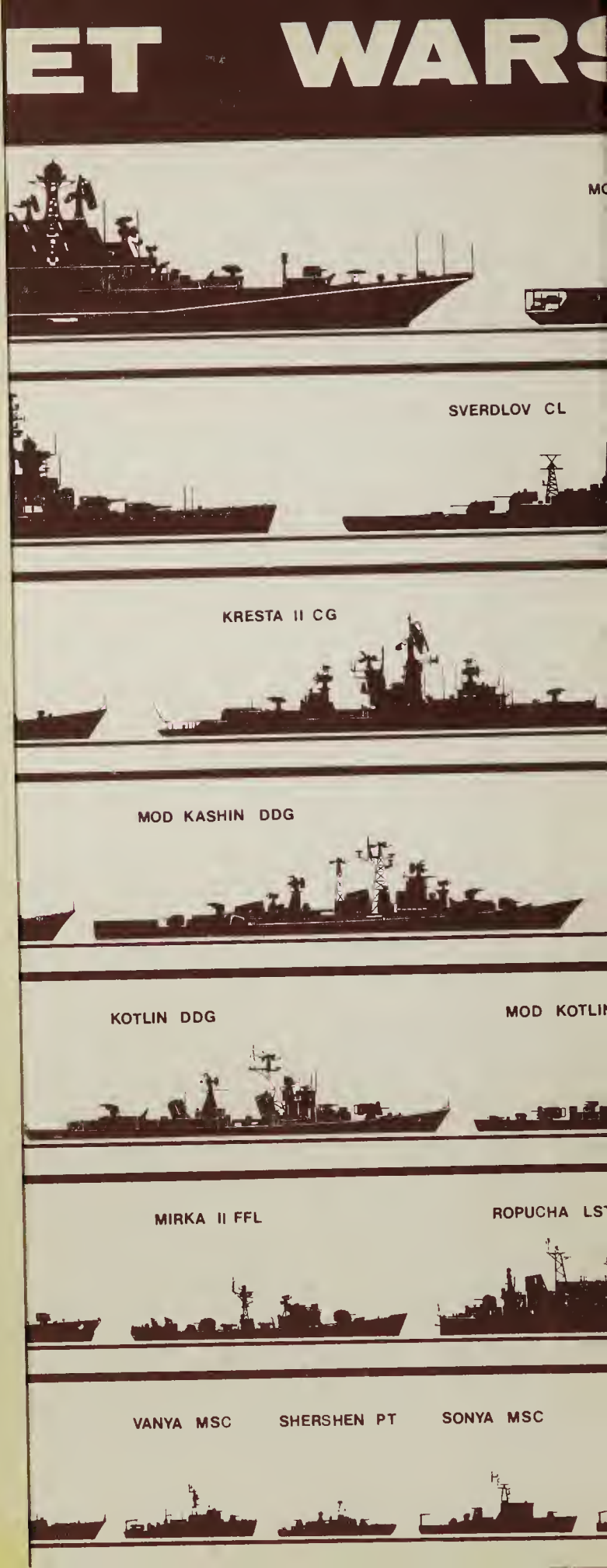
The completely up-to-date text is introduced by the Chief of Naval Operations and includes his assessment of Russia's naval forces and that of the Secretary of Defense.

The Soviet Navy's leadership, training, personnel, policies, missions, capabilities, and composition are examined in this uniquely authoritative book on the world's fastest growing fleet. Descriptions and specifications of each class of warship and aircraft are provided, along with informative comments on the strengths and weaknesses of these units.

OF SPECIAL INTEREST ARE:

- Charts and an appendix on significant naval commanders.
- Photos and descriptions of the new *Ivan Rogov* class amphibious ship.
- An early photograph of the new *Berezina* class fleet replenishment ship.
- Photographs of the *Minsk*, sister ship to the *Kiev*.
- News of plans for a 60,000-ton aircraft carrier and a 25,000-ton nuclear powered cruiser.
- Serial production of the *Alfa*-class nuclear attack submarine.

Jacket Photo: The *Kiev*



SHIP CLASSES



KYNDA CG



KARA CG



MOD KILDIN DD



KANIN DDG



ALESHA MMCS



RIGA FF



ALLIGATOR I LST



ALLIGATOR III LST



MOD PETYA I FFL



PETYA II FFL



POLNOCHNY Type A LSM



SF

NATYA MSF



OSA I PTG



OSA II PTG



POTI PCE



NANUCHKA PGG





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SOVIET NAVAL DEVELOPMENTS

Prepared at the direction of the
Chief of Naval Operations by the
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and the Chief of Information

Department of the Navy,
Washington, D.C.

Edited by Norman Polmar



The Nautical and Aviation
Publishing Company of America





CHIEF OF NAVAL OPERATIONS

“Soviet Naval Developments”

The Soviet Navy has evolved into a force capable of making an offensive presence felt on a worldwide scale. In addition, it acts as a potent instrument of Soviet foreign policy in peacetime. Its capability to conduct coordinated operations on all of the world's oceans was graphically demonstrated in the exercises OKEAN 70 and 75 — the largest peacetime exercises ever conducted by any navy since the end of World War II — as well as continued lesser operations.

This study of Soviet naval developments was prepared to provide background material and to serve as a ready reference on Soviet naval strategy and forces. Given the Soviet Navy's multi-ocean presence and expanding capabilities, each of us in the Navy must be thoroughly familiar with these developments. Intimate understanding of the challenge posed by Soviet naval expansion is necessary if we are to build and maintain sufficient U.S. capabilities to assure uninhibited use of the world's seas.



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PUBLISHER'S PREFACE

This monograph was first published by the U.S. Navy in 1974. It was produced because of the importance attached by the navy's leadership to having all members of the naval service become "professionally knowledgeable about the Soviet Navy and its development." A second reason given for producing this study was that the navy "should inform the public about the unprecedented peacetime growth of Soviet naval power."

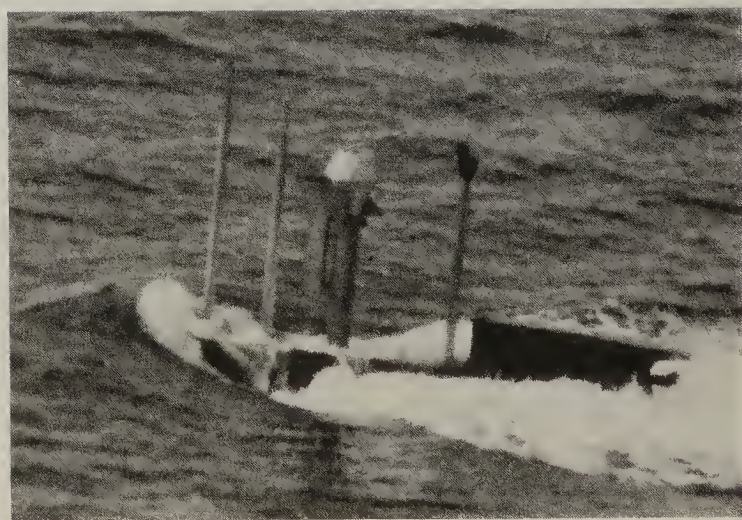
The well known naval writer and analyst, Norman Polmar, originally compiled and edited the book for the Director of Naval Intelligence and the Chief of Information. He has revised and updated this new edition to further fulfill the book's original purpose.

Even as this edition was going to press, additional information on Soviet naval developments was coming to light: reports of the Soviet plan to build a 60,000-ton aircraft carrier to follow the smaller KIEV class; the 25,000-ton nuclear-propelled, missile-armed cruiser building at the Baltic shipyard in Leningrad; and production of the long-delayed Alfa class submarine, a class of highly advanced attack submarines. The Alfa class is constructed of titanium and can dive deeper and steam faster than any other combat submarine in the world. Similarly, since the most recent edition of "Understanding Soviet Naval Developments" was published by the U.S. Navy in 1978, the new Soviet amphibious ship IVAN ROGOV has gone to sea, as has the BEREZINA, first of a new class of underway replenishment ships. With full load displacements of some 13,000 tons and 40,000 tons, respectively, these new classes of amphibious and replenishment ships are similar in size to their Western counterparts, and — with the new Soviet aircraft carrier and nuclear-propelled cruisers — will significantly improve the already impressive ability of the Soviet Navy to operate for sustained periods in the open seas. These new ships will help to remedy some of the last remaining weaknesses of the Soviet fleet long noted by Western intelligence analysts.

Of special interest are: a new appendix on Soviet naval commanders and the 1979 assessments of the Soviet Navy by the U.S. Secretary of Defense and Chief of Naval Operations.

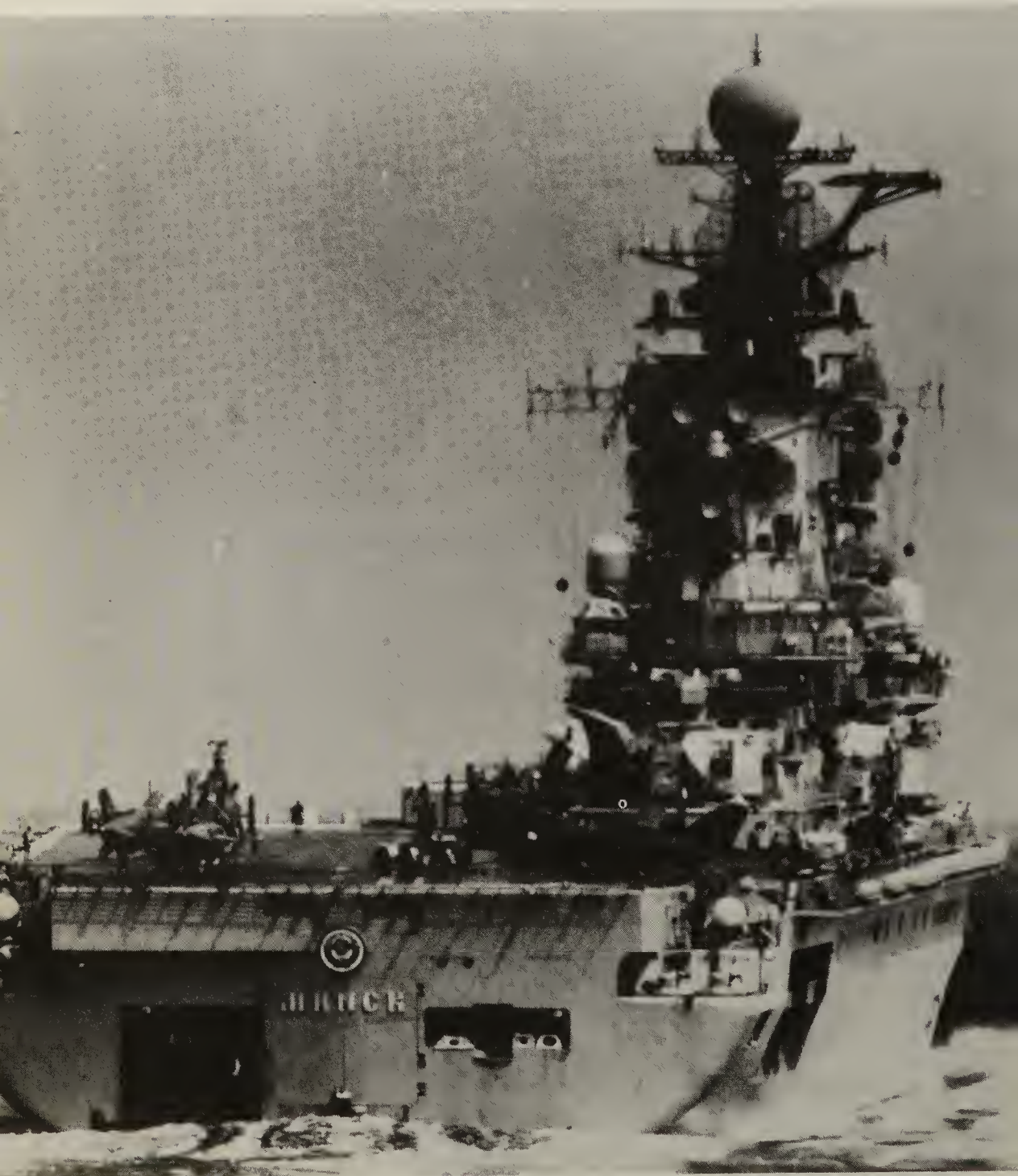
We greatly appreciate the assistance of the offices of the Director of Naval Intelligence and Chief of Information, and notably that of Mr. Robert A. Carlisle, in preparing this edition.

Jan Snouck-Hurgronje
Publisher



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Section 1. PURPOSE

The Soviet Navy has been transformed into an important strategic force, into a force capable of opposing aggression from the sea and of accomplishing major operational and strategic missions on the World Ocean . . . Its relative weight within the composition of the (Soviet) armed forces is continually increasing . . .

*Admiral of the Fleet of the Soviet Union
S. G. GORSHKOV*

One of the most dramatic developments of the post-World War II period has been the growth of Soviet naval and maritime activities.* Today the Soviet Union is a true "sea power," challenging the United States in all aspects of maritime activity. From the end of World War II until the early 1970s the United States maintained unquestioned naval supremacy. This gave the United States great flexibility in foreign policy and provided one of the West's primary shields against Soviet aggression.

During much of this period the Soviet Navy—except for submarines—was ranked fourth, after the U.S., British, and French navies. Only in numbers of submarines could the Soviet Navy rank as the leader at sea in the early post-war era, reaching a peak of some 450 diesel submarines in 1958. Although the Soviet Navy had quantitative superiority in undersea craft, there were substantial qualitative shortcomings in equipment, personnel, and leadership even in the submarine force. Further, Soviet surface warships and submarines seldom ventured far from the coasts of the U.S.S.R.

Today, after a great expenditure of resources, the Soviet Navy has achieved quantitative and qualitative leadership in several aspects of naval power. This Soviet leadership, both real and perceived, is having considerable impact on international political, economic, ideological, and military developments.

There is a tendency in some quarters to foster

scenarios which place the Soviet Navy in the best light while placing the U.S. Navy in "worst case" situations. This approach is alarmist and misleading, just as the positions that all Soviet naval developments are strictly defensive, or are merely a reaction to U.S. and other NATO actions, are complacent and misleading. The Soviet Navy is inferior in several important respects to the U.S. Navy; it has problems and limitations as has the military service of any nation. These will be discussed in the text.

Rather, the considerable influence that the Soviet Navy exerts in world affairs today can be traced to the great strides that it has made in technology, production, operations, and tactics, as well as its extensive use as an instrument of Soviet foreign policy. These developments are of major concern to the U.S. Navy because they narrow the options open to the United States in crisis situations, and because they could result in confrontations with the Soviet Navy or with other navies which employ Soviet weapons and tactics.

This monograph discusses the expansion of Soviet maritime strength in the past, its present status, and what trends are indicated for the future.

Technical and statistical data on the Soviet Navy is provided in the appendixes, as are assessments of the Soviet Navy by the Secretary of Defense and Chief of Naval Operations, and a listing of senior Soviet naval officers.

*In this context "maritime activities" includes the merchant marine, fishing industry, research, and shipbuilding activities.



The Tsarist Russian battleship RETVIZAN's visit to New York in 1901 gave Americans one of their few looks at Russian naval forces. Some American perceptions of Russian naval developments may date back to the RETVIZAN and her participation in the disastrous Russo-Japanese War of 1904-1905. In the foreground is the U.S. submarine HOLLAND.



This KRESTA II-class missile cruiser is symbolic of the current Soviet effort to use the seas for political, military, and economic purposes. The 6,500-ton ship is heavily laden with weapons for use against surface ships, aircraft, and submarines.

Section 2. SOVIET NAVAL POLICY

The flag of the Soviet Navy flies over the oceans of the world. Sooner or later the United States will have to understand it no longer has mastery of the seas.

*Admiral of the Fleet of the Soviet Union
S. G. GORSHKOV*

Soviet naval policy is based on efforts to extend national influence by maritime activities that date back almost 300 years. Those efforts have continued under tsars and commissars, sometimes spearheaded by explorers and researchers, at times by the merchant and fishing fleets, often by the navy, and at times, as now, by a combination of maritime activities.

A. PERSPECTIVE, 1700-1953

The Soviet Navy traces its beginnings to the early 1700s when the western-oriented Tsar Peter I founded a city in the Neva marshes at the eastern end of the Gulf of Finland (now Leningrad) and built a navy to fight the Swedes. Prior to that time the only secure Russian outlet to the sea was on the frigid arctic coast.

Employing British and Dutch shipbuilders and officers, Peter constructed a fleet, and achieved major victories over the Swedes. These victories established Russia as a power in the Baltic region and as a sea power.

During the following centuries, tsarist and then Soviet naval forces had few victories at sea of which to boast. There were a few decisive victories at sea against the Turks in the 18th and 19th centuries, but British and French naval forces frustrated Russian ambitions in the Mediterranean and elsewhere.

The overwhelming defeat of Russian fleets by the Japanese Navy in the war of 1904-1905 dramatically demonstrated Russian shortcomings at sea. A decade later, in World War I, the Russian Navy was ineffective in the conflict against Germany, and disillusioned Russian sailors became torchbearers of the Communist revolution in the fall of 1917.

The Russian revolutions and the civil war destroyed the nation's navy and other maritime activities, including shipbuilding. Not until the early 1930s could Soviet industry begin the construction of large submarines and destroyers. Although several cruisers and battleships were begun on the eve of World War II, only a few of the former were completed and those that were available contributed little to the conflict.

Interestingly, when World War II began in Europe in 1939, the Soviets had the world's largest submarine fleet, 165 units compared to 57 German U-boats (and some 95 U.S. submarines). When the Soviets entered the war in June 1941, they had 218 submarines. However, these undersea craft had few successes and no impact on the course of the war because of geographic limitations, weather (often being ice-bound in the Baltic), poor training and tactics, and the German use of mines, convoys, and anti-submarine forces.

Thus, the Soviet Navy had a minor, supporting role in the war. It was the massive Soviet Army which won the great battles which defeated Hitler's Germany. And, it was the Army which was the Soviet Union's threat to the war-ravaged nations of eastern and western Europe after the war had ended.

At war's end the Soviet Union was again incapable of building a major fleet; one-third of the country had been overrun by German armies and 20 million persons—ten percent of the population—had either been killed in battle or died of privation.

Still, Joseph Stalin, the Soviet dictator, sought an ocean-going navy for the Soviet Union. High priorities were given to this task and by the late 1940s the nation's industry had been sufficiently rebuilt, in part by using German technology and

engineers, to begin work on submarines, battleships, cruisers, and destroyers. The Soviet Navy even planned the construction of aircraft carriers.

Stalin died in March of 1953 and his plans for an ocean-going fleet were buried with him. In the months that followed the dictator's death the ship-building programs were cancelled or cut back. For example, only 14 to 24 planned SVERDLOV-class light cruisers would be completed; none of the larger STALINGRAD-class cruisers or SOVIET UNION-class battleships were finished; and the carrier program did not get past the planning stages.

B. KHRUSHCHEV'S POLICIES

The masters of the Kremlin during the mid-1950s paid little attention to naval matters. Rather, economic and internal political problems were their main concern. During this period some warship building ways were turned to merchant ship construction.

Nikita Khrushchev initiated new naval policies when he emerged as the new ruler of the Kremlin. In 1956 he appointed Sergei Gorshkov, a 45-year-old admiral who had been promoted to rear admiral at the age of 31, as Commander-in-Chief of the Soviet Navy. Admiral Gorshkov presided over the dismantling of much of Stalin's Navy: existing battleships were scrapped, as were several older cruisers and destroyers; many personnel were either retired or dismissed; and, all of the several thousand land-based fighter aircraft of the Soviet Navy were transferred to the National Air Defense Forces.*

In the place of Stalin's planned ocean-going fleet, Admiral Gorshkov was directed to develop a missile-armed fleet of small craft and submarines which could "defend the Soviet Union from possible Western aggression." It was hoped that comparatively inexpensive guided (cruise) missiles could counter the U.S. naval forces that were being built up, in part, because of the Korean War (1950-1953). Soviet military planners were particularly concerned with U.S. aircraft carriers that could launch planes carrying nuclear bombs while several hundred miles from the Soviet coasts, and with amphibious forces that could land troops on the Soviet coasts.

During the 1950s the Soviet Navy developed destroyers and submarines that could fire missiles against U.S. aircraft carriers while the Soviet ships remained under the protection of land-based fighter

aircraft. For coastal defense, the Soviets built the famed KOMAR and then OSA classes of missile boats which were armed with 3TYX (SS-N-2) anti-ship missiles. Also, several hundred medium bombers were transferred to Soviet Naval Aviation for use in the anti-ship role.

By the late 1950s Admiral Gorshkov was able to obtain approval for larger missile-firing ships. The first of these ships were the missile-firing cruisers of the KYNDA-class. Each of these ships has eight launching tubes plus eight reloads for the SS-N-3 anti-ship missile. With target acquisition provided by either an aircraft, a submarine, or a surface ship, the missile can deliver up to a ton of high explosives or a nuclear warhead against hostile ships some 250 miles away.

This concern for countering aircraft carriers was intense during the 1950s and 1960s, and substantial resources were dedicated to this task. Although today the strategic missile submarine force and anti-submarine warfare receive greater emphasis, the Soviet Navy still maintains formidable anti-carrier forces. The newest weapon system being assigned to this task is the supersonic BACKFIRE bomber.

Soviet concern for the U.S. carrier force was based on the strategic strike capabilities of carrier-based aircraft. The Navy's role was expanded in 1960 when the first U.S. ballistic missile submarine, the GEORGE WASHINGTON, went to sea. The GEORGE WASHINGTON is a nuclear-powered submarine carrying 16 strategic POLARIS missiles. Forty-one U.S. ballistic missile submarines were completed from 1960 to 1967, providing a massive deterrent to Soviet aggressive actions.

Response by the Soviet Navy to U.S. strategic missile submarines included construction of new classes of anti-submarine ships, among them the unique helicopter carrying missile cruisers MOSKVA and LENINGRAD. These ships, described in detail in a subsequent section, each operate some 18 ASW helicopters fitted with submarine detection devices and capable of carrying depth bombs or torpedoes.

The Soviet Navy under Khrushchev thus was configured as a defensive force, initially for close-in coastal defense, then to attack approaching U.S. aircraft carriers, and then to counter the threat from strategic missile submarines. However, the ships, submarines, and aircraft developed for the mission would be capable of carrying out other Soviet military objectives as well as supporting political and even economic goals. Like western navies before it, the modern Soviet fleet would prove to be a highly flexible instrument for the nation's leadership.

*Since 1960 the Soviet Union has had five separate military services or "forces." In their normal order of precedence they are: Strategic Rocket Forces, Ground Forces, National Air Defense Forces, Air Forces, and Navy.

C. THE NAVY GOES TO SEA

As Commander-in-Chief of the Soviet Navy, Admiral Gorshkov initially followed Khrushchev's directives to dismantle the larger surface warships (Khrushchev had once remarked that large warships were only useful for hauling around admirals). Gorshkov halted Stalin's big-ship building programs (albeit, completing 14 of the SVERDLOV light cruisers) and disposed of many older Soviet warships. Yet, it would be only a few years until Gorshkov again had the Soviet Navy building large surface ships. In the interim, he pushed development of missile-armed destroyers, patrol boats and diesel submarines, as well as nuclear powered submarines. The first of these new classes began appearing in the late 1950s.

Still, Admiral Gorshkov was unable to build an ocean-going fleet except for submarines, and even

there the Soviet Navy had limitations. The lack of a far-ranging fleet was politically embarrassing to the Soviet government in 1956 when Anglo-French naval forces invaded Suez, in 1958 when U.S. naval forces landed in Lebanon, and in 1962 when a U.S. naval blockade (and the threat of overwhelming nuclear retaliation) forced the Soviets to withdraw strategic weapons from Cuba. In these situations the Soviets virtually had no options for countering western political-military activities at sea except by propaganda. These lessons appear to have indelibly impressed the present leaders in the Kremlin.

In 1963 the Soviet Navy chief "ordered his men to sea." Despite limitations in training, experience, support capabilities, and the like, the Soviet Navy began operating beyond its traditional coastal areas and out of its defensive posture. In mid-1964 Soviet warships established a continual presence in the Mediterranean. An average of five Navy ships were



Soviet admirals salute the cruiser KASNY KAVKAZ during a naval review in 1947. The 8,000-ton cruiser was laid down in 1913, but work halted during the Russian revolution and civil war and she was not completed until 1932! She served in the Black Sea during World War II, being damaged on several occasions. Reportedly, the ship survived until 1950 when sunk as a target.

maintained in the Mediterranean that year; the number gradually increased and soon Mediterranean port visits were scheduled. During the Arab-Israeli war in June of 1967 a steady stream of Soviet ships passed through the Turkish Straits into the Mediterranean until the Soviet Mediterranean Fleet numbered some 70 surface warships, submarines, and support ships.

Subsequently, the Soviet Navy has maintained an average of at least 40 to 45 ships in the Mediterranean. Periodically, the number increases as relieving surface ships from the Black Sea Fleet and submarines from the Northern Fleet (coming through the Strait of Gibraltar) enter the Mediterranean and operate for a short period of time together with the ships they are replacing.

Soviet capabilities for rapid deployment of naval forces in the Mediterranean area were demonstrated in October-November 1973. Within a few days of that outbreak of hostilities in the Middle East, a steady stream of Soviet naval ships was passing south through the Turkish Straits, and a second Northern Fleet submarine group entered the Mediterranean. These forces doubled the strength of Soviet Mediterranean fleet.

By early November, when the 1973 crisis reached its peak, there were 96 Soviet naval units in the Mediterranean: 5 cruisers, 14 destroyers, 6 escort ships, 2 NANUCHKA-class missile ships, 9 amphibious ships, 6 intelligence ships, and approximately 25 submarines (several of which were nuclear-powered), with the remainder being support ships. The surface ships had 20 surface-to-air missile launchers as well as a considerable number of anti-ship missiles. Several of the submarines also carried anti-ship missiles.

However, neither one of the two Soviet MOSKVA-class helicopter carriers was in the Mediterranean, nor was the new KARA-class cruiser NIKOLAYEV, which had left the Mediterranean on the eve of the buildup. The absence of these ships indicated that the powerful reinforcement of the Soviet Mediterranean Fleet was less than an all-out effort. Possibly the Soviet strategy called for "withholding" these primarily ASW ships at the beginning of a conflict, or they simply did not wish to risk these high-value ships in a Middle East conflict.

Still, the Soviets were able to deploy 96 surface ships and submarines into the Mediterranean during a period when the U.S. Sixth Fleet reached a peak strength of 66 ships. Three aircraft carriers provided the most potent U.S. conventional warfare capabilities in the region. The Soviet Black Sea Fleet's naval

aircraft were within striking range of the Mediterranean, but would have had to violate Turkish airspace to reach the eastern Mediterranean.

The only other strike aircraft in the immediate area at the time that could have been made available to the Soviets were some 12 TU-22 BLINDER bombers recently delivered to Iraq. However, airfields in Egypt and Libya (including the former U.S. Wheelus Air Force Base) had, in the past, supported Soviet strike aircraft and could have accommodated Soviet BADGERS and BLINDERS if political permissions were obtained.

In addition to the naval buildup, it is interesting to observe that very shortly after hostilities erupted between Israel and the Arab states, numerous Soviet merchant ships began loading tanks, aircraft, and other war material in Black Sea ports. Most of the estimated 2,000 tanks that were supplied to the Arab armies after the outbreak of war, as well as considerable amounts of other supplies, were transported to Egypt and Syria by Soviet merchant ships. These ships complemented the intensive Soviet airlift which delivered more time-critical items such as disassembled fighter aircraft and guided missiles.

Soviet warships also began operating regularly in the Indian Ocean during the late 1960s, in the Caribbean in 1969, and off the western coast of Africa late in 1970. The Kremlin leadership had discovered Sea Power!

These warships fly the Soviet Hammer and Sickle banner and represent Soviet interests—economic, political, and military. In this manner, the Soviets are employing their Navy in much the same way as the United States and Great Britain effectively used ships in various parts of the world during the previous decades to support their national interests. The Soviets have rediscovered the use of ships to support state interests. Throughout this period not only did the Soviet Navy's capabilities expand greatly, but its tasks and missions also changed.

D. EXPANDING NAVAL MISSIONS

Over the last two decades the Soviet Navy has been transformed from a basically coastal defense force into an ocean-going force designed to extend the defenses of the U.S.S.R. well to sea, and to perform most of the traditional functions of a naval power in waters distant from the Soviet Union. Multi-ocean exercises, such as OKEAN-70 and -75, the continued naval presence in distant seas, and the construction of larger, more capable warships, all

manifest this evolution in the role of the Soviet Navy.

Recent Soviet military writings also reflect this evolution of naval missions. An example of this is the 1976 article on the Soviet Navy signed by Admiral Gorshkov in the *Soviet Military Encyclopedia*, which characterizes the Navy as:

The branch of the armed forces intended to carry out strategic and operational missions in the sea and ocean theaters of combat operations. With respect to its combat capabilities, today's Navy is capable of delivering strikes by its strategic nuclear forces against important enemy ground targets, of destroying his naval forces at sea and in their bases, of disrupting enemy ocean and sea communications and protecting own sea communications, of aiding the ground forces in conducting operations in the continental theaters of military operations, of landing amphibious forces, of carrying troops and transporting material, and of evacuating sick and wounded. The Navy can conduct a naval operation both independently and jointly with other branches of the armed forces.

By studying such writings of Soviet authors, particularly Admiral Gorshkov's most recent book *Sea Power of the State* (1976), by analyzing Soviet naval exercises and activity, and by observing the ships, aircraft, and weapons built by the Soviets, a reasonable understanding of Soviet naval missions can be determined.

According to Admiral Gorshkov, the basic mission of the Soviet Navy is the "battle against the shore"; he writes that:

In our day, a navy operating against the shore possessed the capability . . . of directly affecting the course and even the outcome of the war. In this connection, naval operations against the shore have assumed dominant importance in naval warfare, and both the technical policy of building a navy and the development of the art of naval warfare have been subordinated to them.

The "battle against the shore" is used in both the offensive and defensive sense, and includes strategic missile strikes against enemy "shore" targets, attacking the enemy's threat to one's own "shore," and supporting the ground forces. More specifically, Soviet naval missions can be stated as: (1) strategic

offense, (2) maritime security of the Soviet Union, (3) interdiction of sea lines of communication, (4) support of the ground forces, and, in situations short of general war, (5) the support of state policy.

Strategic Offense

The priority development given to ballistic missile submarines (SSBN) over the past decade makes it clear that the strategic nuclear strike capability has become the Soviet Navy's primary mission. From 1967 through 1978 Soviet shipyards have completed 63 nuclear-propelled strategic missile submarines of the YANKEE and DELTA classes.

Construction of the enlarged, DELTA II submarines are continuing while a still larger SSBN, referred to by a Soviet official as TYPHOON, is reported to be under construction. The DELTAs, at about 10,000 tons submerged displacement, are the world's largest submarines now in service; the TYPHOON design is unofficially reported to approach the size of the still-building U.S. TRIDENT submarines, which will displace more than 18,000 tons submerged.



Admiral of the Fleet of the Soviet Union S. G. Gorshkov.

Accompanying this intensive strategic submarine development has been a succession of improved Submarine-Launched Ballistic Missiles (SLBM). The 1,300-nautical mile missile originally carried by the YANKEEs is being replaced with slightly longer-range weapons, some carrying multiple warheads. The SS-N-8 carried by the DELTAs has a range of over 4,000 nautical miles, and the SS-NX-17 and SS-NX-18 missiles now entering the fleet for the YANKEE and DELTA classes, respectively, provide increased range, more accuracy, and, in some models, advanced multiple warheads.

In early 1979 the relative strengths of the U.S. and Soviet fleets in numbers of modern ballistic missile submarines and submarine-launched missiles were:

Figure 1.
**BALLISTIC MISSILE SUBMARINES
AND MISSILES**

	United States	Soviet Union
Modern Submarines (Nuclear)	41	63
Older Submarines (Nuclear)	0	8
Older Submarines (Diesel)	0	22
SLBMs	656	950

In 1979, U.S. submarines and strategic missiles were qualitatively superior to the Soviet weapons in several key categories; however, that qualitative advantage is being reduced as Soviet development efforts continued at a rapid pace.

When the lead TRIDENT submarine, the USS OHIO, becomes operational in 1981, the U.S. Navy will add the first strategic missile submarine to the fleet since 1967. With current building rates, by that time the Soviet Navy could have 70 modern SSBNs compared to 42 U.S. submarines.

In addition, 22 older GOLF (diesel) and eight HOTEL (nuclear) ballistic missile submarines are operational in the Soviet Navy. Although most of these submarines have shorter range and less-sophisticated missiles, they do pose a threat to the West, especially in the European theater.

The large commitment of resources which the Soviet leaders have allocated to their sea-based nuclear strike forces is indicative of the vital importance of that force.

Maritime Security

The mission of providing for the maritime security of the Soviet Union includes both strategic and tactical defense tasks against threats from the sea to the Soviet homeland. This is an expansion of the Navy's traditional "defense of the homeland" mission. Soviet naval forces are very aggressively and offensively oriented in exercising these "defensive" tasks; the Soviets are firm believers in the old adage that "the best defense is a good offense."

Included in the mission of maritime security is the destruction of enemy naval forces, particularly those that pose a strategic threat to the Soviet Union, such as Western strategic missile submarines and aircraft carriers. The Soviets have considerable forces available to locate and attack surface formations such as carrier and amphibious task forces. Although they have expended considerable resources in recent years on anti-submarine warfare, including an intensive ASW research and development program, the U.S. Navy's leaders do not believe that the Soviets have resolved the problem of locating a large number of nuclear-powered submarines on the high seas with a high degree of probability. This task becomes progressively more difficult as longer-range missiles become available to permit submarines to operate in much larger areas of ocean and still remain within range of their targets. But the Soviet ASW efforts are considerable and continuing.

Another aspect of maritime security is Soviet countering of the considerable ASW forces of the U.S. Navy and our Allies. The Soviets are thus concerned with the protection of their own SSBNs and have developed forces to attack Western ASW forces in a "defense in depth" concept. Admiral Gorshkov describes this task by noting:

Diverse warfare ships and aircraft are included in the inventory of our Navy in order to give combat stability to the submarines and comprehensively support them, to battle the enemy's surface and ASW forces . . .

In support of this mission, the Soviet Navy has developed several classes of large ASW ships which, along with aircraft and submarines, appear to be intended to enhance the survivability of Soviet submarines. This is a highly specialized form of "sea control." However, the newer classes of large ASW ships—especially the KRESTA II and KARA cruiser classes—are multi-purpose ships which have significant Anti-Air Warfare (AAW) and Anti-Surface



Warfare (ASUW) capabilities as well. Thus, the ships are versatile warships suitable to use in sea control roles in addition to screening submarines. Again, operating with submarines and aircraft, the large ASW ships can permit the Soviets to exercise their own type of sea control to provide maritime security for their submarines, amphibious and merchant convoys, minelaying forces, replenishment ships, and overseas coastal areas.

Sea-Line Interdiction

The interdiction of Western Sea Lines of Communication (SLOC) has been a mission of the Soviet Navy since World War II. The relative importance of SLOC interdiction within the hierarchy of Soviet naval missions has fluctuated, depending on the current perceptions of the likely nature and length of a NATO-Warsaw Pact conflict. If such a war were nuclear and of short duration, Soviet anti-convoy operations would be of little consequence. But since the advancement of NATO's "flexible response" strategy, as well as increased conventional and nuclear capabilities on the Soviet side, the Soviets have increasingly written about the possibilities of conventional war and prolonged conflict.

Although the extent and timing of a SLOC interdiction campaign depends on the nature of the initial stage of the conflict, the Soviets have clearly indi-



Admiral Gorshkov emphasized the development of anti-ship missiles. By the late 1950s several missiles were at sea, including the SS-N-2 STYX. At top, Soviet sailors lower a STYX into a launch tube and, above, an OSA missile boat fires a STYX.

cated that they regard SLOC interdiction as an important mission. They have a large capability in their submarine and air forces to fight such a campaign once the decision to do so has been made. As Admiral Gorshkov has stated:

the disruption of the ocean lines of communications, the special arteries feeding the military and economic potentials of those (the enemy) countries, has continued to be one of the most important of the Navy's missions.

Support of Ground Forces

The Soviet Union's geographical position and its consequent status as primarily a land power demands that the Soviet Navy protect the seaward flanks of the army. Although the Soviet Navy has been recast into an oceangoing force with major offensive as well as defensive tasks, support of the ground forces still remains an important mission. This mission, of course, entails protecting the army's seaward flanks from attack by enemy naval forces, providing naval gunfire support, and carrying out amphibious assaults in support of land operations.

The Soviets maintain several SVERDLOV-class cruisers, most with 12 six-inch guns, and a large short-range assault force of amphibious ships and naval infantry ("marine") assault units, presumably for flanking operations or to seize key coastal areas in support of ground operations. Also, the diesel and nuclear-propelled submarines armed with short-range ballistic missiles apparently have theater strike roles in support of ground operations. Indeed, in 1976 six GOLF II-class SSBs, each with three 700-nautical mile nuclear ballistic missiles, were assigned to the Baltic for this role. These were the first ballistic missile submarines to be assigned to the Baltic Fleet.

Soviet military doctrine calls for the small naval infantry force to be augmented by army units which are trained in amphibious operations. Several army divisions periodically practice amphibious landings, and a large merchant fleet is available to supplement the amphibious ships in moving these troops.

Support of State Policy

The Soviet leadership in the last two decades has awakened to the value of a powerful navy and the other elements of sea power in supporting the nation's foreign economic, political, and military policies.

The Soviets have discovered the tenets which Alfred Thayer Mahan postulated in his book *The Influence of Sea Power Upon History* (1890) and what some of the tsars before them realized: a navy is well suited for an active and useful role as an instrument of state policy in peacetime as well as in wartime.

Because of its great operational flexibility, its visibility, and the lack of political restraints on the movement of warships on the high seas, a fleet is able to make demonstrations of power in distant areas in support of national objectives. Of all the armed services, a navy is best suited for this role on a world-wide basis because it is not restricted by the sovereignty of airspace over land or territorial rights.

The tutor to the Kremlin in naval matters has been Admiral Gorshkov. He has stated:

Warships appearing directly off the shore represent a real threat of operations whose time and execution are determined by those in command. Whereas such a threat was quite great in the past, today it is much more so, since modern warships are platforms for nuclear-missile weaponry and aircraft whose range can cover the entire territory of a state.

He also has written:

Navies . . . are constantly being utilized as an instrument of state policy in peacetime. In this regard, navies have assumed particular significance under today's conditions. The mobility of the fleet and its flexibility in the event limited military conflicts are brewing permit it to have an influence on coastal countries, to employ and extend a military threat to any level, beginning with a show of military strength and ending with the disembarkation of a landing party.

Taking Admiral Gorshkov at his word, one can observe that "support of state policy" goes beyond the peacetime "showing the flag" role. In recent years the Soviets have not been timid in using their Navy to support client states and friends in time of crisis. Prime examples are the 1967 and 1973 Arab-Israeli Wars, the Bangladesh War of 1971, and the Cuban intervention in the Angolan civil war during 1975.

Today, Soviet naval forces are deployed continuously on several seas and perform a variety of political and military tasks. They demonstrate Soviet military might through port visits, assert Soviet rights on the high seas, protect the interests of Soviet

merchant and fishing fleets, demonstrate support for Soviet clients, and inhibit Western military initiatives: The Russian bear has grown webbed feet.

E. THE FUTURE

The Soviet Navy can be expected to seek to expand its capabilities in various mission areas in the years to come. The Soviets might seek to expand their now limited ability to project conventional power ashore in areas distant from the Soviet Union into a full-fledged seaborne projection capability with its attendant sea control, amphibious assault,

and sea-based aviation forces. This possibility is discussed further in Section 4.

As the Soviet Union expands its world trade and becomes increasingly dependent on foreign commodities and imported technology, it will become necessary to provide protection when required to distant Soviet sea lines of communications.

Another emerging mission for the Soviet Navy, as well as the other navies of the world, will be the protection of facilities exploiting ocean economic resources. With or without the introduction of a new International Law of the Sea Treaty, exploitation of the seabed and fishing resources will become an increasingly important issue among seafaring nations.



The Soviet Navy now maintains a fleet in the Mediterranean on a continuous basis. Seen here at the southern entrance to the Aegean Sea are, clockwise from top, a KASHIN missile destroyer, a VYTEGRALES-class cargo ship, a KASHIN with a NANUCHKA missile ship astern, and a KOTLIN destroyer with a NANUCHKA astern.



Section 3. THE SOVIET NAVY TODAY

Our country has built a modern Navy and sent it out into the ocean in order to support our own state interests and to reliably defend us from attack from the vast ocean sector.

*Admiral of the Fleet of the Soviet Union
S.G. GORSHKOV*

The Soviet Navy has dramatically increased at-sea operations since the early 1960s. There has been particular emphasis in the political-economic crisis areas such as the eastern Mediterranean and Indian Ocean. Along with this quantitative increase there has been an increase in warship capabilities. At the same time, U.S. naval forces and operations have declined considerably.

A. OPERATIONS

Today, the Soviet Navy maintains ships at sea in several areas of the world far distant from the U.S.S.R. Descriptions of these ships, their weapons, and their crews are found in subsequent sections of this publication.

Soviet Navy long range deployments have increased dramatically since the early 1960s. Until then Soviet ships remained primarily in coastal areas, adjacent to their major fleet operating bases in the Black Sea, Baltic Sea, Arctic Ocean, and northwest Pacific Ocean. Then, after Admiral Gorshkov's "go to sea" order of 1963, a dramatic increase in Soviet operations outside of coastal areas began. Figure 2 shows this trend. U.S. Navy ship deployments are provided for comparison. U.S. operations decreased dramatically in the early 1970s, partially as a result of the reduction of the active fleet by almost one-half of its peak strength during the Vietnam War (1968).

Mediterranean

The most significant Soviet deployments have been in the crisis-plagued eastern Mediterranean. Soviet ship days in the Mediterranean increased from

some 4,000 in 1965 to more than 18,600 in 1976. A "ship day" is one day for each Navy ship deployed coastal exercise areas. Thus, 18,600 ship days means an average of about 50 ships in the area every day of the year. There has been a significant improvement in the fighting ability of the individual Soviet warships deployed as well as an increase in total numbers of ships.

The Soviet Mediterranean fleet normally consists of:

- 8 to 10 torpedo attack submarines
- 2 to 3 cruise missile attack submarines
- 2 to 4 cruisers, some or all armed with guided missiles and periodically one helicopter-missile cruiser of the MOS-KVA class
- 9 to 12 destroyers and escort ships, some armed with guided missiles
- 1 to 3 minesweepers
- 1 to 3 amphibious ships
- 15 to 20 auxiliary ships
- 5 to 6 survey, oceanographic research, and intelligence collection ships

The presence of these ships increases Soviet political and military options in the eastern Mediterranean. For example, shortly after the June 1967 Arab-Israeli war began the Soviets sent ships in the harbors of Port Said and Alexandria in an obvious move to deter Israeli attacks against those ports.

The air bases in Egypt used by the Soviets from 1967 until 1972 permitted Soviet land-based naval reconnaissance and ASW aircraft to operate over the eastern Mediterranean without overflying Greece or Turkey. The loss of Egyptian air bases to the Soviets in 1972 unquestionably reduced Soviet military capabilities in the eastern Mediterranean. How-

SOVIET NAVY

U.S. NAVY

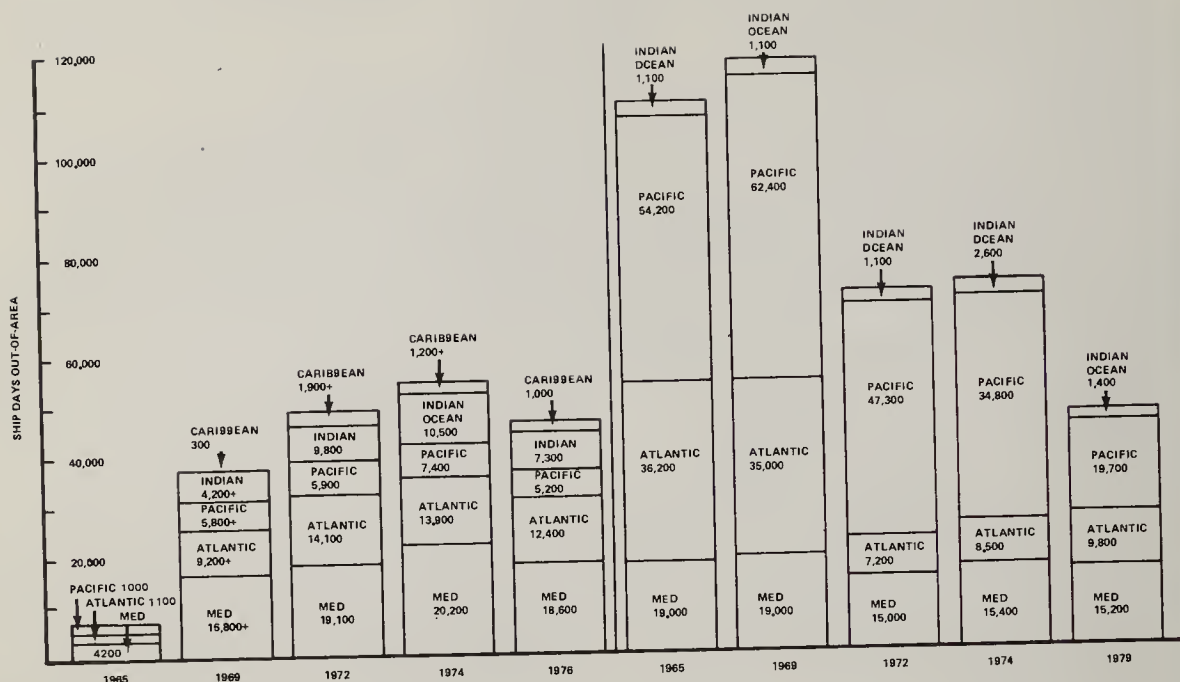


Figure 2
Trends in U.S. — Soviet Naval Operations
Ship Days Out-of-Area

ever, the Soviet naval position in 1972 after loss of the air bases was still far superior to that of a decade earlier.

Besides the large numbers of fighter aircraft provided by the Soviets to Middle Eastern countries, BADGER bombers have been provided to Egypt, and BLINDER supersonic bombers to Iraq and Libya. Soviet aircraft also operate from bases in those nations.

A number of missile-armed patrol boats have been delivered by the Soviets to Third World countries in the Mediterranean, as well as diesel torpedo-attack submarines of the FOXTROT, WHISKEY, and ROMEO classes to Egypt and Libya.

Caribbean

Soviet naval deployments to the Caribbean Sea began in mid-1969 when a task force consisting of a missile-armed cruiser, two missile-armed destroyers, three attack submarines (one nuclear powered), and three auxiliary ships operated in the Caribbean and made port visits to Cuba.

One year later, another Soviet task force operated in the Caribbean and others periodically have steamed in those waters since that time. Nuclear-powered cruise missile submarines and conventionally powered, GOLF-class ballistic missile submarines have operated in Cuban waters. On several occasions these ships have operated in the Gulf of Mexico off the Louisiana and Texas coasts. Soviet cruise and ballistic missile submarines sailing in these waters could target nuclear weapons against the entire southeastern United States, including such major population centers as Dallas, Fort Worth and Atlanta.

In April of 1970 a pair of long-range, BEAR-D naval reconnaissance aircraft flew non-stop from bases in the Murmansk area on Russia's Arctic coast down the Norwegian Sea, across the Atlantic, and landed in Cuba. Other reconnaissance aircraft have followed in what has become nearly routine flights, with some of these aircraft subsequently flying reconnaissance missions off the U.S. Atlantic coast. (One of these aircraft was accidentally lost with all on board off Newfoundland in November 1975.)

The periodic presence of Soviet naval ships in the

Caribbean demonstrates Soviet support for the Castro government. This presence could inhibit U.S. options in the area, and could be used to support intervention or revolution in Central American nations.

West Africa

Soviet warships have maintained a nearly continuous patrol off the African west coast since late 1970. The appearance of these ships in the Gulf of Guinea "coincided" with the release by the Accra government of two Soviet fishing craft impounded some months earlier. Further, Soviet warships appeared in the aftermath of a Portuguese-supported raid against Conakry, Guinea, in November 1970, possibly in an effort to deter further attacks.

Since the spring of 1973, pairs of naval BEAR-D reconnaissance aircraft have been making periodic deployments to Conakry, Guinea, from the Soviet Arctic to fly surveillance missions against U.S. Navy ships in the central Atlantic.

During the Angolan civil war in 1975-1976 Soviet warships were dispatched to patrol the waters near Angola to demonstrate Soviet support to the Cuban intervention in support of one rebel group. Simultaneously, Soviet aircraft flew in Cuban troops and supplies for them, while the Soviet merchant marine mounted a massive sealift of war material. Since that time BEAR-D reconnaissance aircraft have been reported operating out of Luanda, Angola.

Indian Ocean

Soviet ships regularly operate in the Indian Ocean, generally with a missile-armed cruiser, several destroyers, an amphibious ship, a submarine, and a number of support ships. These ships demonstrate support of Soviet interests on the coasts of three continents that are washed by the Indian Ocean.

This regular deployment, which commenced in 1968, has been a key element in Soviet relations with India and several of the newer countries in the area. The Soviets have built a number of naval and air facilities in Somalia, which is located on the eastern hump of Africa in a strategic position to control the southern entrance to the Red Sea and the Suez Canal. The Somali facilities include a complex at Berbera consisting of piers, a large floating dry dock, a missile handling facility, a fuel farm, and an airfield, as well as a communications station. Soviet naval ships regularly use Berbera and Soviet naval aircraft flew into Somali airfields enroute to conduct surveillance over the western portion of the Indian Ocean until they were requested to leave Somalia in late 1977.

The Soviet Indian Ocean squadron also has used port facilities in Iraq and Aden, and made calls to selected ports on the Indian Ocean littoral. More recently, Soviet naval ships have been reported in the Mozambique Channel, possibly to provide protection to Soviet merchant ships calling at Mozambique or to show support to that country in its disagreement with Rhodesia.



The BEAR-D reconnaissance aircraft provides the Soviet Navy with long-range reconnaissance and missile guidance. Note the counter-rotating propellers on the BEAR's four turboprop engines, the "chin" redome, and nose refueling probe.

The Soviets have shown a willingness to expand their naval commitment in the Indian Ocean whenever they believe their interests to be threatened. During the India-Pakistan War of 1971 and immediately after the Arab-Israeli War of 1973, the Soviets increased the number of warships, including cruise missile submarines, deployed to the Indian Ocean to counter U.S. carrier forces which had been sent in from the Pacific.

In the aftermath of these two wars the Soviet Navy provided harbor clearance and minesweeping services to both Bangladesh and Egypt, respectively. They helped in clearing the port of Chittagong and the southern approaches to the Suez Canal. One of the ships involved in the Suez operations was the cruiser-helicopter carrier **LENINGRAD**.

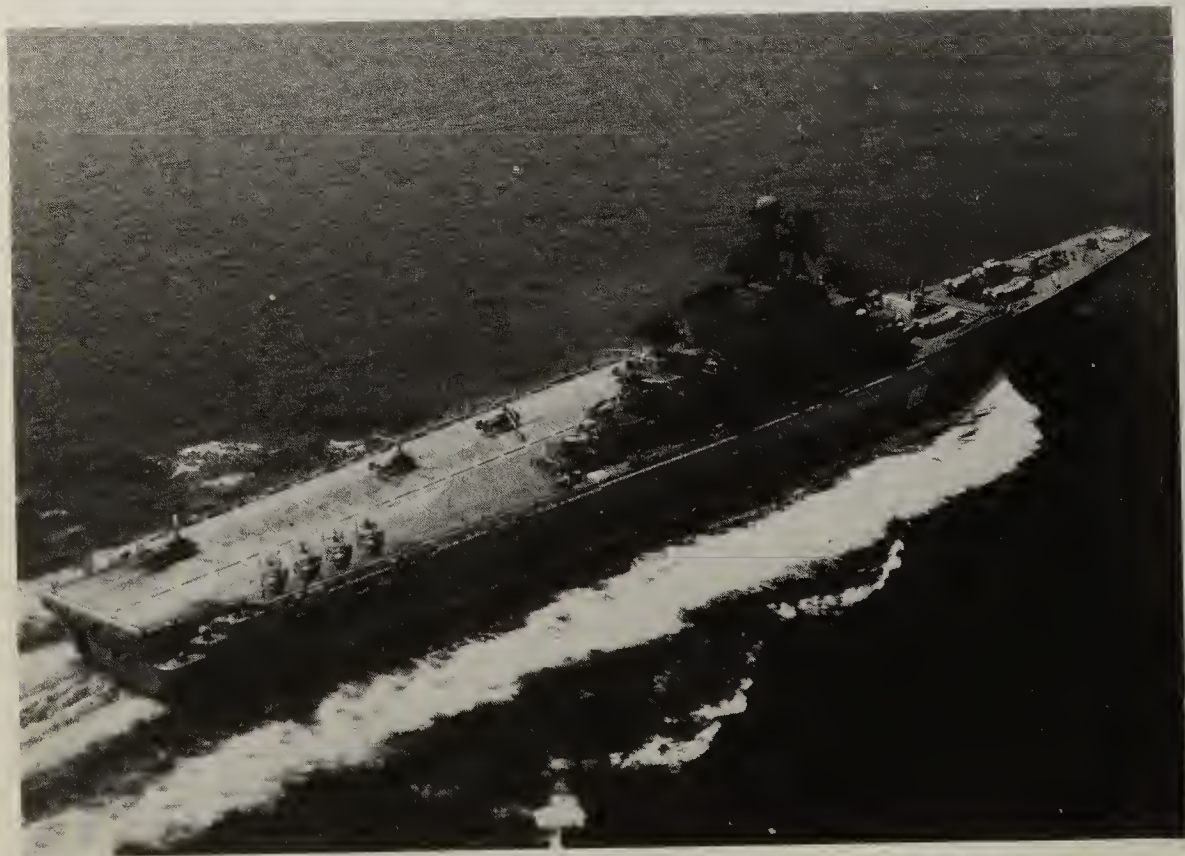
Although the Suez Canal is now open, making the Soviet Black Sea Fleet more accessible to the area "east of Suez," the majority of the Soviet ships which deploy into the Indian Ocean make the long trip from the Pacific Fleet. It is on long transits such as these that the Soviets will often tow submarines and smaller

combatants as one way of reducing "wear and tear" on their ships, extending the time between engine overhauls, and conserving fuel.

Since the termination of the Bangladesh and Egyptian operations the number of Soviet naval ships and, therefore, the total number of "ship days" in the Indian Ocean have decreased. The Soviets now average a force of about 20 ships in the Indian Ocean, the majority of which are naval auxiliaries. (In comparison, the U.S. Navy's standing commitment to the Indian Ocean area consists of one amphibious ship converted to a flagship and two destroyers or frigates. Periodically a U.S. carrier task force is deployed into the Indian Ocean, but only with considerable difficulty in ship scheduling and logistics.)

Pacific Ocean

In the Pacific the Soviets initiated long-range surface ship operations during the 1950s when relations between Moscow and Peking were amiable.



The aircraft carrier **KIEV** — called an anti-submarine cruiser by the Soviets — provides a new dimension to Soviet naval capabilities. The "flattop," displacing approximately 40,000 tons, has the potential for anti-submarine, fleet air defense, reconnaissance, and anti-ship strike and close air support operations. Note the gun, missile, and rocket armament on her bow.

Subsequently, aid to Indonesia and other Soviet interests in the Pacific basin led to expanded Soviet naval operations.

During the fall of 1971 a Soviet force consisting of a guided-missile cruiser, two missile-armed destroyers, three submarines, and a tanker crossed the Pacific to the Gulf of Alaska, and then turned south to steam to within 25 miles of Diamond Head, Hawaii, before returning to Soviet Pacific coast ports. Today, Soviet warships periodically visit many parts of the Pacific world where, until a decade ago, Soviet military power was discussed but never seen. In 1976 two Soviet missile-armed destroyers and an oiler made a port visit to Vancouver, Canada.

Soviet Pacific Fleet ships were used to collect intelligence and, on occasion, as a show of force against the U.S. Seventh Fleet during the Vietnam War. Soviet intelligence ships (AGI) are regularly deployed off Guam to monitor U.S. ballistic missile submarine arrivals and departures. AGIs also operate off the U.S. West Coast with some regularity. A number of Soviet space support and recovery ships ply the north central Pacific, an area into which the Soviets test fire their long-range ballistic missiles.

Submarines

The above review of Soviet naval activity considers primarily surface ship movements. From the 1960s onward there have also been a marked increase in submarine activities. These have included both torpedo and cruise missile attack submarines, and strategic missile submarines. The latter has particular significance because of the greatly reduced flight time of submarine-launched ballistic missiles compared to the 30-minute flight time of intercontinental ballistic missiles launched from the Soviet Union, or the several-hour flight time of manned bombers from the Soviet Union if attacking targets in the United States. The Soviet SLBM capability could threaten U.S. bomber bases and Minuteman ICBMs as well as national command centers, possibly destroying bombers and "pinning down" missiles before they could be launched. (SLBMs generally are considered to lack the accuracy to destroy Minuteman ICBMs in underground silos.)

The earliest Soviet strategic-missile submarines constructed in the late 1950s posed little threat to the continental United States. These submarines had a limited underwater endurance, could only fire their missiles while on the surface, and were armed with only two or three SARK (SS-N-4) missiles which had a range of about 350 nautical miles and

poor accuracy. These submarines also had operational problems with one GOLF-class SSB having been lost in the North Pacific in 1968, and one HOTEL-class SSBN experiencing serious engine trouble in the North Atlantic early in 1972. (The HOTEL was towed back to the Soviet Union on the surface.)

The Soviet SLBM situation changed radically in 1967 when the Soviets sent to sea their first YANKEE-class submarine. This submarine, nuclear propelled and armed with 16 SS-N-6 missiles with an initial range of 1,300 nautical miles, was more difficult to detect and had a potent strike capability. During 1968 the YANKEE-class SSBNs began patrols in the Atlantic, periodically coming within range of U.S. cities. In 1971, YANKEE SSBN patrols also began off the Pacific coast. The later DELTA-class SSBNs, with a missile range in excess of 4,000 nautical miles, are within striking distance of New York City or the nation's capitol of Washington while still in their home port areas on the Arctic coast. This same situation applies in the Pacific with DELTA-class SSBNs at their base of Petropavlovsk on the Siberian coast being within missile range of most western U.S. cities such as Seattle and San Francisco.

Whereas just over a decade ago the Soviets had a relatively small strategic submarine force with a few short-range missiles, today's Soviet SLBMs provide a significant and increasing percentage of the Soviet strategic nuclear strike.

The massive SSBN effort, which has produced over 60 nuclear-propelled submarines in ten years, has not detracted from the Soviet attack submarine programs. Several classes of nuclear and diesel submarines armed with torpedoes and guided missiles are also under construction.

The modernization of the Soviet submarine force, despite a reduction of overall numbers of submarines, has resulted in significant increases in submarine operations in many areas of the world.

B. TRENDS

An analysis of the Soviet Navy during the past two decades reveals (1) significant increases in warship, aircraft, and weapons capabilities; (2) large increases in at-sea and distant deployment operations; (3) commitments of Soviet national resources to strive for a Navy "second to none"; and (4) increased awareness by the Soviet leadership of the leverage which accrues to a nation with strong maritime resources, especially a large, modern navy.

Several comparisons of trends related to the U.S. and Soviet navies tend to lend credence to these observations.

The Soviet Navy is, by far, the largest in the world today in terms of numbers of ships due primarily to the large numbers of submarines, small combatants, and mine warfare ships in its inventory. While the preceding is an important point, estimating the relative capabilities of navies is not just a matter of comparing force levels, "bean counting," or matching distant deployments and exercises. All of these are factors in estimating the naval balance, but just as important are weapons, sensors, communications, and personnel, as well as trends in doctrine, development and procurement. In making net assessments of navies the prime point becomes which navy is best able to accomplish its missions while thwarting those of adversaries which pose a threat.

Although the total numerical inventory is declining, the Soviet Navy is expected to continue to have the world's greatest number of warships for the foreseeable future.

It cannot be ignored that as a result of the Soviet leadership's determined policy to expand all facets of the sea power "equation," the Soviet Navy is continuing to expand its recently acquired "blue water" capabilities and indications are those efforts

will not diminish over the next several years.

Figures 3 and 4 depict the comparisons of the numbers and tonnages between the various ship categories in the Soviet Navy and U.S. Navy. It should be noted that the U.S. Navy greatly exceeds the Soviet fleet in aircraft carriers; that although the Soviet Navy has more amphibious ships, the U.S. Navy's amphibious lift capability is much greater than that of the Soviets. Figure 4 demonstrates that if one subtracts the U.S. Navy's 13 aircraft carriers the Soviet Navy has a greater tonnage. Thus, the U.S. Navy's tonnage advantage and most capable conventional strike capabilities are in a limited number of ships. However, the Soviets have numerical and tonnage leadership in several important categories.

Surface Combatants

The number of Soviet major surface combatants (frigates, escorts and larger) is greater than that of the U.S. Navy, although more than 100 of the Soviet count are frigates which are significantly smaller than their U.S. counterparts. With the planned U.S. ship-building program, it is possible this Soviet numerical advantage will be reduced in the future.

The principal surface combatants which the Soviets are building today have greater range, fire-

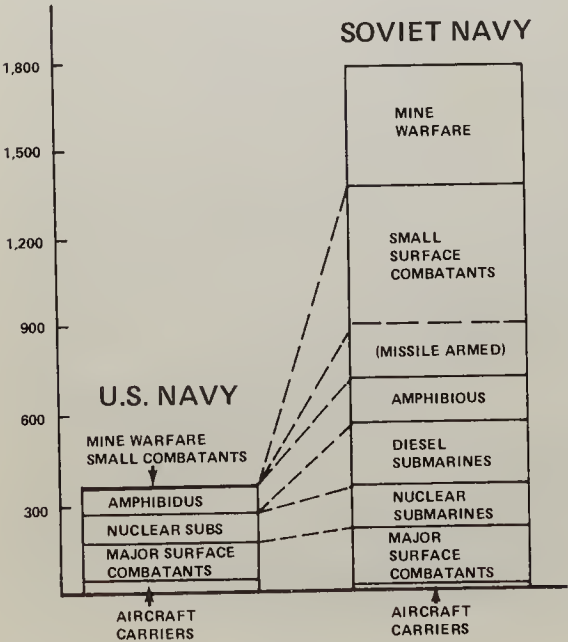


Figure 3
NUMBER OF SHIPS IN COMMISSION, 1976

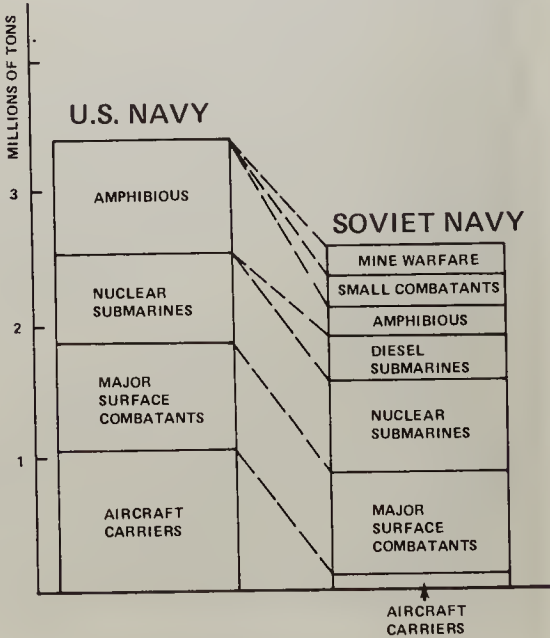


Figure 4
FULL LOAD DISPLACEMENT OF SHIPS IN COMMISSION, 1976

power, and electronics capabilities than in the past. The modern ships of the Soviet Navy are among the fastest and most heavily armed in the world; they are of innovative modern design, graceful yet purposeful in appearance, and have contributed greatly in elevating the prestige and power of the Soviet Union among the world's nations.

The Soviet Navy has led the world in the use of cruise missiles in naval warfare. Since the installation of the SS-N-1 cruise missile on the KILDIN and KRUPNYY classes of destroyers in the late 1950s, the Soviets have extensively developed and deployed this type of weapon. Today the Soviet Navy has over 20 cruisers, carriers, and destroyers; about 60 submarines; and 290 land-based aircraft armed with anti-ship cruise missiles. The first major U.S. weapon of this type, the HARPOON, began to enter service in 1975. The U.S. Navy has not emphasized the development of the cruise missile as an anti-ship weapon because of greater capabilities inherent in carrier aircraft. However, as the number of aircraft carriers has been reduced, the development of the HARPOON and TOMAHAWK cruise missiles was undertaken by the U.S. Navy. An ambitious HARPOON installation plan for aircraft, submarines, and surface combatants will greatly reduce the Soviet cruise missile advantage. Although the U.S. Navy

may close the gap in numbers of cruise missile systems and sophistication of guidance systems, the Soviets will, in some of their systems, retain a range and warhead size advantage.

Critics often tend to write off the threat from the Soviet's smaller combatants (those less than 1000 tons). For the most part they operate close to the Soviet coasts; however, the Soviets continue to pay attention to their coastal forces for obvious reasons. The Soviet Union is surrounded by a number of strong coastal navies which are viewed as threats. This situation exists to varying degrees in all four fleet areas, but it is greatest in the Baltic. Thus, the Soviets maintain the world's largest small combatant force (many of which are missile armed), and the largest mine warfare force as a means of controlling their coastal seas. And, periodically these coastal forces operate in the regional seas, such as Norwegian and Mediterranean, where they can threaten U.S. interests.

Submarines

The Soviets have led the world in the production of submarines in the post-World War II period. Since the end of the war Soviet shipyards have built over 600 submarines (compared to about 150 for the United States).

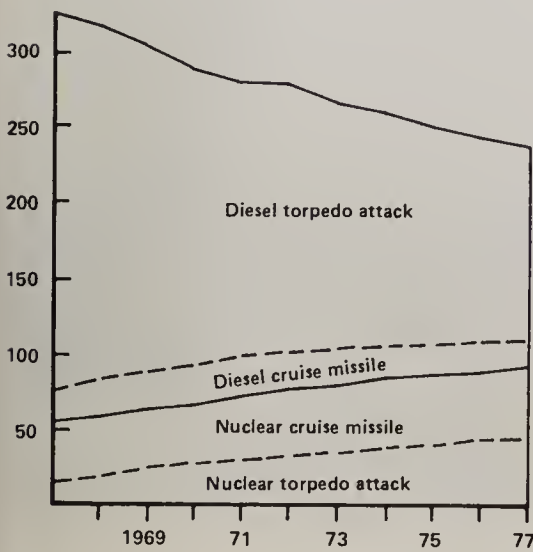


Figure 5

SOVIET ATTACK-CRUISE MISSILE SUBMARINES

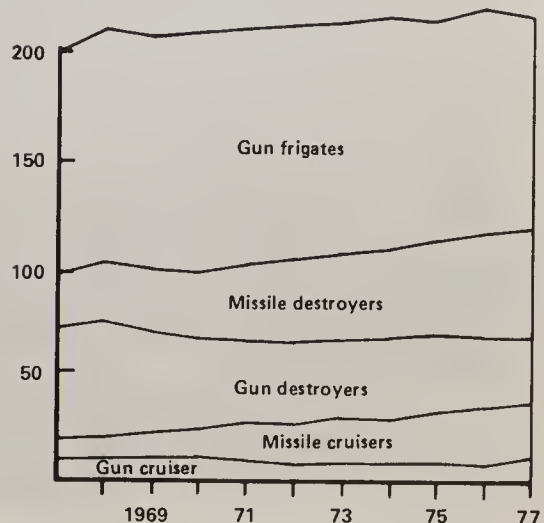


Figure 6

SOVIET MAJOR SURFACE COMBATANTS

Of particular significance has been the Soviet emphasis on nuclear-powered submarines. The Soviet Union has completed more and larger nuclear-powered submarines than the United States.

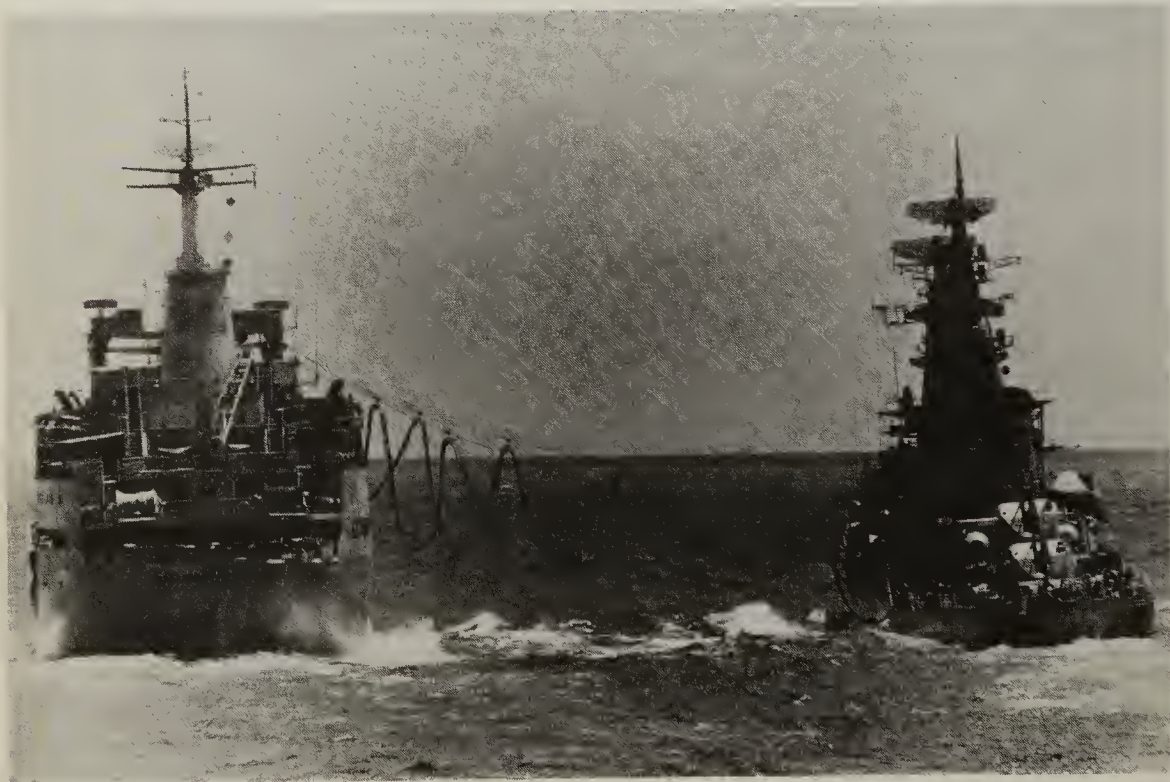
The Soviet Union maintains a large submarine construction capability which they continue to expand, and which is now being used at less than 50 percent of its estimated capacity. Submarines are produced in five building yards in the U.S.S.R. while presently only two U.S. yards are constructing submarines. The huge shipbuilding complex at Severodvinsk on the White Sea could well have a greater nuclear submarine building capacity than the combined nuclear submarine building capabilities of the United States, Great Britain, and France.

Over the last several years the Soviets have constructed about 12 new submarines a year, with probably ten of those being nuclear powered. By contrast, the U.S. has built an average of about three attack nuclear submarines per year; this total is increasing to five or six per year as the new LOS ANGELES-class production peaks during the next several years, but will probably decline in the mid-1980s.

The Soviets have constructed both diesel and nuclear-powered submarines which can launch cruise missiles while the U.S. Navy is now beginning to deploy the HARPOON missile in submarines, and is developing a submarine-launched TOMAHAWK. The Soviets have also developed a weapon similar to the U.S. Navy's SUBROC, an underwater-launched missile which flies a relatively short trajectory and carries an anti-submarine torpedo or depth charge.

The Soviet Navy continues to build diesel submarines to fill what Admiral Gorshkov says is a continuing need, both of the TANGO class, a modern attack submarine for fleet use, and the ubiquitous FOXTROT class for foreign sales.

The Soviet submarine force continues to be the dominant branch of the Soviet Navy. Although the total number of submarines has been slowly decreasing as older diesel craft are retired, the numbers of nuclear-powered and missile-armed submarines continue to increase. (See Figure 5) In comparison with U.S. submarines, it is estimated the Soviets still lag in anti-submarine sensors and weapons as well as submarine quieting techniques.



The Soviet Navy currently has a limited capability for underway replenishment at sea. The BORIS CHILIKIN-class replenishment ship shown here fueling a KYNDA-class missile cruiser demonstrates that Soviets are making progress in this area of naval operations.

Aviation

Soviet Naval Aviation has taken two significant steps in the last several years: the introduction of a sea-based, fixed-wing capability on the aircraft carrier KIEV; and the introduction of the swing-wing, supersonic, missile-armed BACKFIRE bomber.

The Vertical and Short Take-Off and Landing (VSTOL) FORGER aircraft can operate from the KIEV-class carriers. Although of limited capabilities, the FORGER is none-the-less the beginnings of a new dimension to the Soviet Navy. It provides the embryo of what the Soviets have always lacked, the ability to provide air cover and air striking power as an indigenous part of the fleet when operating in distant waters. There are reports of a class of 60,000-ton aircraft carriers to be built in the 1980s.

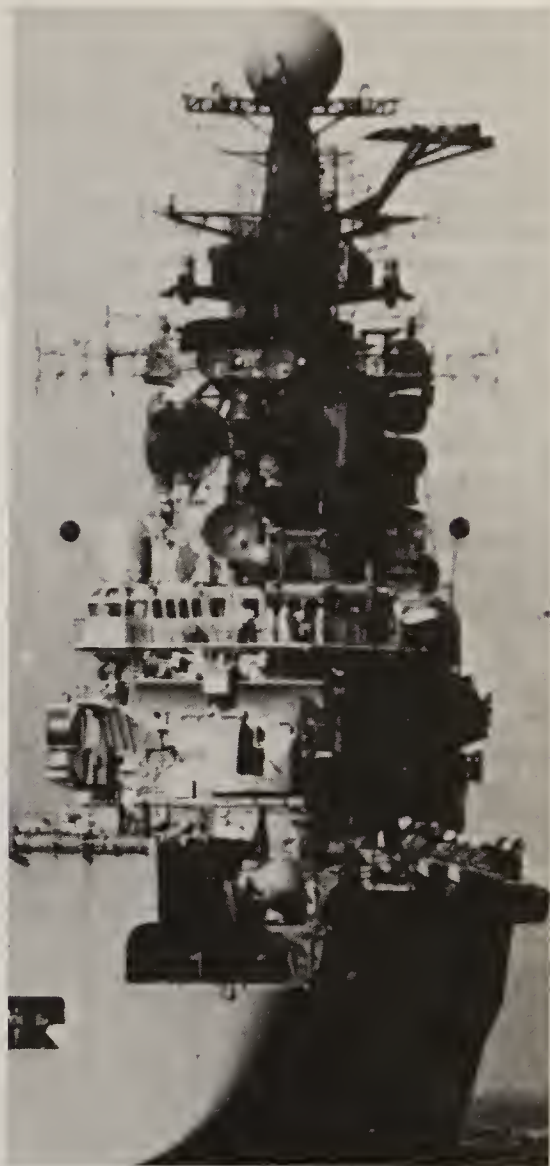
It is significant that BACKFIRE bombers are being supplied to the Navy in about the same numbers as to the Soviet Air Forces' Long Range Aviation. The anti-ship mission of the Navy's air force thus remains a high priority.

The airborne ASW capability of the Soviet Navy consists of HORMONE, HAZE, and HOUND helicopters, and MAY and BEAR-F fixed-wing aircraft. The Soviets have undertaken considerable research and development into ekranoplanes or "Wing-In-Ground" (WIG) effect vehicles. Some of this effort has been directed toward naval applications. The Soviets could be developing an anti-submarine configured WIG.

Soviet Exercises

Coupled with the increase in ship numbers and capabilities, there has been a related increase in at-sea operations, as discussed previously. As Soviet warships have gone farther from their home ports and spent more time on the high seas, there also has been an increase in the complexity of their naval exercises. To date the largest of these were the two OKEAN (Russian for *ocean*) exercises conducted in the spring of 1970 and again in 1975.

These were the two largest peacetime naval exercises in history, with Soviet warships simultaneously conducting maneuvers in Atlantic, Mediterranean, Indian Ocean, and Pacific Ocean areas. Over 200 submarines, surface combatants, and support ships participated in OKEAN 70, and about 120 ships in OKEAN 75. The maneuvers included anti-submarine, anti-aircraft carrier, sea lines interdiction, convoy escort, and amphibious landing operations. Land-



The electronics-laden island structure of the KIEV helps to demonstrate the allocation of technological resources by the Soviet Union to the development of a modern and highly capable fleet.

based naval aircraft as well as planes from the Soviet Air Defense Forces and Long-Range Aviation participated in the maneuvers.

It appeared that these exercises were coordinated from Soviet Naval Headquarters in Moscow. From Soviet writings it is evident that a major aim of the exercise was to test the Soviet ocean surveillance system and the overall command, control, and communications (C³) systems in world-wide scenarios. These two large exercises clearly demonstrated

the scope and range of Soviet naval capabilities.

The Soviet Navy exercises routinely in anti-submarine, anti-carrier, and amphibious warfare, in home operating waters and when on distant deployments. For example, in the spring of 1977 the Northern and Baltic Fleets jointly conducted a large exercise in the Norwegian, Barents, and Baltic Seas. Also, the Soviets conduct ASW exercises in the Gulf of Mexico with the Cuban forces, and combined missile attack and amphibious exercises in the Baltic with the East German and Polish navies.

C. LIMITATIONS

The Soviet Navy does have significant limitations and shortcomings. During a presentation to Congress in 1977, the U.S. Navy's Director of Naval Intelligence, noted the following weaknesses of the Soviet Navy:

The Soviets' open-ocean ASW capability is low. They presently lack a meaningful sea-based tactical air capability. Their strike and reconnaissance bombers are vulnerable to attack beyond the range of land-based Soviet fighters. Their underway replenishment capability is low. Last, but by no means least, geography mitigates against the Soviets' effective use of their navy; major fleet areas are geographically separated and located great distances from the main sea lanes of the world. Access to the open oceans is restricted by narrow straits in the Black Sea, Baltic Sea and Sea of Japan.

It is important to note that the list of Soviet naval limitations today are far fewer than a decade ago; the relative impact on Soviet naval operations of those limitations that still exist are far less today than previously; and, on-going Soviet efforts will reduce still further if not completely remove those limitations in the future.

Improvement of Soviet open-ocean ASW capability is being sought by a variety of methods, with extensive efforts in basic research and development in several detection fields, and major allocations of resources to ASW weapons procurement. Most modern Soviet surface combatants, a significant segment of the submarine force, and many of the combat aircraft of the Soviet Navy are dedicated primarily to hunting Western submarines.

Sea-based aviation capabilities also will increase significantly in the next few years as additional KIEV-class ships with their FORGER (and later)

VSTOL aircraft join the fleet, and more BACKFIRE strike aircraft are produced. The current lack of shipboard fighter aircraft is partially offset by the extensive use of medium- and short-range surface-to-air missiles, and a variety of guns for close-in defense against aircraft and missiles.

The limitations of Soviet strike and reconnaissance aircraft can be mitigated somewhat by overseas basing, such as has been done periodically by Soviet naval aircraft flying from Cuba, Guinea, Iraq, Angola, Somalia, and, until 1972, Egypt. Of course, as the Soviet Navy deploys more VSTOL aircraft to sea, these planes could be used to defend formations of naval strike aircraft. Lastly, the BACKFIRE bomber has supersonic dash speeds, greater range, and better low-altitude performance than its predecessor, the BADGER.

The Soviet Navy has no insurmountable problems replenishing and maintaining its distant deployed fleets during peacetime. The Soviet Navy employs tenders and oilers in anchorages in international waters as its prime means of logistic support. Most of the oilers operate under the flag of the Soviet Merchant Marine.

Additionally, shore-based logistic and repair facilities are used to varying degrees in foreign ports where the Soviets have managed to gain some degree of access. Countries which provide such services include Syria, Cuba, Yugoslavia, Tunisia, Guinea, Angola, and Yemen.

During a war such port facilities might be denied or inaccessible, and the anchorages would be vulnerable. The underway replenishment of fuels, ammunition, consumables, and repair parts would be required to maintain warships at sea for sustained periods of conflict. The Soviet Navy has been slow in developing its underway replenishment capabilities and techniques and has almost exclusively concentrated on refueling. The movement of solid stores between ships underway and helicopter delivery techniques have not been practiced to any extent. During the last ten years the Soviets have introduced the BORIS CHILIKIN and BEREZINA classes of oiler-stores ships, and have several of these sophisticated underway replenishment ships in operation. Further, a number of Soviet merchant oilers can provide alongside underway refueling as well as the slower astern method traditionally used by the Soviet Navy. Several smaller types of underway replenishment ships have been built for the Navy.

With the introduction of aircraft carriers into the Soviet Navy, with their greater demands for a variety of fuels, ammunition, and provisions, it is antici-

pated that the Soviets will construct larger, multi-purpose replenishment ships similar to the U.S. Navy's AOE design.

Through the centuries, Russia has been burdened with poor physical conformation of her coasts and geographic positions with respect to access to the open oceans. Today the Soviets have lessened some of these geographic limitations. For example, the scarcity of all-weather ports has been partially overcome with extensive use of icebreakers, and northern shipyards and bases have covered building ways and floating dry docks.

In the later 1950s the significant ocean-going ships and submarines which the Soviets would use in the Atlantic were moved from the restricted waters of the Baltic to the Northern Fleet. Although the latter fleet had to contend with rigorous Arctic climate, and had a much greater distance to travel to gain access to the North Atlantic, that access was a relatively open seaway not restricted by straits which could be easily controlled by the West. The Baltic Fleet today consists principally of a large number of smaller warships, diesel submarines, mine-sweepers, and amphibious ships. It is a fleet which, along with those of the East German and Polish

navies, is designed to control the Baltic and to provide support to the ground forces operating along the Baltic coasts. Under this arrangement the constraint of the Danish Straits becomes less critical to the Soviets.

Similarly, the Black Sea Fleet's ability to go to sea through the NATO controlled Turkish Straits and Aegean Sea is a lesser problem because a number of that fleet's ships normally are deployed in the Mediterranean. However, resupply from the Black Sea would be a problem.

The Soviet Pacific Fleet has been expanded in recent years and is now second only to the Northern Fleet in numbers of ships. To overcome the traditional restrictions on this fleet imposed by the Japanese Straits, the Soviets have developed a large naval complex at Petropavlovsk, on the Kamchatka Peninsula, which has direct access to the Pacific Ocean.

Lastly, it should be noted that where geographic conformation restricts Soviet access to the open oceans, the reverse is also true. These restrictions can assist the Soviets in defending their waters against Western maritime threats.

Another criticism leveled at the Soviet Navy is that it is a "one-shot" fleet, optimized for strong



Two MIRKA-class frigates close on a tanker and the missile cruiser-helicopter carrier MOSKVA in the Mediterranean. Some Soviet operational areas and missions are different than those of the U.S. Navy, hence many Soviet ships differ in design and size from their American contemporaries. The MIRKAs have combination diesel-gas turbine propulsion systems.

initial striking power with relatively limited offensive weapon reloads. This is Admiral Gorshkov's "battle of the first salvo" philosophy. This could be considered a limitation, but at the same time it permits the Soviet Navy to be optimized for a specific war situation. However, Soviet ships have a significant reload capability, generally comparable to U.S. ships, in torpedoes, guns and surface-to-air missiles.

D. SALESMANSHIP

The statement has been made that the Soviets are achieving a political and psychological impact with their maritime forces far out of proportion to their size and capabilities. This is believed due to often exaggerated descriptions of Soviet naval capabilities published in the West.

Not surprisingly, the same adjective-filled descriptions are trumpeted by the Soviet press and, probably of more significance, by the press of non-aligned or "third world" nations. In the same respect that "beauty is in the eye of the beholder," so is power in the eye of the beholder. In this situation the "beholder" is, to a large extent, the world that is using the seas more than ever before in history for political, resource, trade and military purposes.

The Soviet leadership—especially Admiral Gorshkov—unabashedly boasts of the scope, range, influence, and capabilities of Soviet naval forces. Admiral Gorshkov's recent book *Sea Power of the State* has been widely distributed throughout the world as well as in the Soviet Union. The Red Navy is very much in the thoughts and words of the Soviet leadership. Whereas in the late 1950s Premier Nikita Khrushchev declared the obsolescence of surface fleets, and cited cruisers as being useful only to carry admirals, the current Soviet leadership obviously has a different view of naval forces.

The regular visits of Soviet Party and State leaders as well as foreign officials to warships of the Soviet Navy demonstrate their endorsement of these ships and their operations. For example, commenting on the OKEAN exercises of 1970, the Soviet Minister of Defense at the time, the late Marshal of the Soviet Union A. A. Grechko, declared that the Navy "had grown up, strengthened, and is capable of reliably defending our state interests on the wide reaches of the world's oceans." And, L. I. Brezhnev, the First Secretary of the Communist Party, has observed the reaction of the United States to Soviet naval efforts. He has explained the ability of the Soviet Navy to limit western freedom of action by pointing to American reaction in this manner:

The propaganda machine of the USA has launched a whole campaign concerning the Soviet Navy. Washington, you see, perceives a threat in the fact that our vessels appear in the Mediterranean, in the Indian Ocean, and in other seas. But at the same time their Sixth Fleet is constantly in the Mediterranean—at the side, as it were, of the Soviet Union, and the Seventh Fleet—off the shores of China and Indochina.

The Soviet Mediterranean Fleet normally has slightly more ships than the U.S. Sixth Fleet and the Soviets are logging more "ship days" in that sea than the United States. As Soviet naval forces deploy farther on the high seas they also are visiting more foreign ports. Admiral Gorshkov stated in the early 1970s that in the previous three-year period:

some 1,000 combatants and auxiliary ships have visited the ports of 60 countries in Europe, Asia, Africa, and Latin America. More than 100,000 of our officers and rated and non-rated men have visited the shores of foreign states.

What a contrast to 20 years or earlier when Soviet naval visits outside the Communist sphere did not average one per year!

As an indication that such activity continues to increase, another Soviet admiral has noted that in 1975 the Navy had visited 82 ports in over 50 countries, and that some 80,000 Soviet officers and sailors had strolled on foreign shores.

Soviet sailors do not fill the local museums, restaurants, and bars as do American sailors, nor do they have significant funds. But, at the same time, the Red sailors do go ashore and their warships, modern and well kept, do ride at anchor in an increasing number of harbors. Their ships often carry bands and dance teams on these visits, and the local officials, and sometimes the public, are invited to tour the ships.

With this widespread, visible presence of the Soviet Navy in many areas of the world, and its threat of interposition as a shield to a client state or revolutionary movement (such as happened during the Angolan civil war), Western nations have had their peacetime political options greatly reduced. As French writer Michel Tatu has observed:

Landings of the type carried out by the United States in Lebanon in 1958 and in the Domin-

ican Republic in 1965 would be more hazardous, if not entirely out of the question, today. On the other hand, a landing by Soviet "marines" to support some "progressive" regime or to help some minority fraction in a power struggle is not longer inconceivable.

As a means to achieve better understanding between the two superpower navies and their personnel, the U.S. Navy and Soviet Navy exchanged port visits in 1975. The United States sent a cruiser and destroyer to Leningrad and the Soviets sent two destroyers to Boston. Both visits were generously welcomed by their respective hosts, and large, enthusiastic crowds toured the visiting ships in both countries. Also, during the 1976 Operation Sail and International Naval Review of American bicentennial Independence Day Celebration, the largest sailing

ship present was the beautiful square-rigged KRUSHENSTERN, a Soviet merchant marine training ship. Over the last two years naval protocol visits also have been exchanged between the Soviets and Britain, Canada, and France, as well as a number of smaller nations.

Thus, Soviet ships at sea are impressive, especially to those who need to use the sea for political, economic, and military purposes. The perceptions of Soviet naval and maritime prestige held by other nations have become a major factor in international relations.

In summary, Americans must keep a perspective when discussing the development, capabilities, and intentions of the Soviet Navy. We must be cautious of overstating but, even more important, we must guard against understating the threat offered by the Soviet Navy.



The Soviet merchant marine training bark KRUSHENSTERN was the largest participating ship in Operational Sail, a gathering of tall sailing ships during the American bicentennial celebration. The Soviet merchant marine and fisheries industries use several sailing ships as well as more modern ships for personnel training.



Section 4. SOVIET NAVAL HARDWARE

In the course of building our Navy, a great deal of attention was devoted and continues to be devoted to constantly maintaining all the elements comprising its combat strength in the most favorable combination, that is, as we have come to say today, to keep them balanced.

*Admiral of the Fleet of the Soviet Union
S. G. GORSHKOV*

The Soviet government has made a tremendous investment in ships, aircraft, weapons, sensors, and related naval hardware during the past two decades. This investment has been applied to producing a large fleet that is, in many respects, innovative and highly capable. However, the missions of the Soviet Navy are somewhat different than those of Western navies, as are certain personnel traits, approaches to research, industrial base, and tactics and doctrine. Hence, Soviet naval hardware is in many respects different than "equivalent" U.S. naval systems.

A. SURFACE WARSHIPS

The Soviet Navy maintains the world's largest fleet of major surface combatants, plus patrol and coastal combatant forces which total almost as many units as the rest of the world's navies combined. Admiral Gorshkov has stated that his surface ships are to provide "combat stability" for his prime war fighting forces, the submarines and naval aviation. The Soviets not only view their surface warships as necessary elements of a "balanced fleet," but also use their ocean-going warships as a primary instrument for "showing the flag" throughout the world, to provide a visible naval presence when necessary in support of Soviet foreign policy. Emphasis continues on multi-purpose, long-endurance ships more heavily armed with anti-submarine, anti-air, and anti-ship weapons than any comparable ships of their respective class in other navies.

A description of the surface warships is provided in Appendix C of this publication.

Aviation Ships

The widely publicized KIEV-class aircraft carriers are the largest warships ever built in the Soviet Union.* After years of criticizing U.S. carriers as being obsolete and vulnerable, Soviet naval writers began to change their professed views in the late 1960s. Grudging praise of the flexibility and mobile power represented by the modern aircraft carrier began to creep into Soviet writings.

Although one aircraft carrier seems to add little when taken as a part of the whole spectrum of Soviet naval power, the Soviets now, for the first time, have a sea-based, fixed-wing aviation capability. The second KIEV-class ship, the MINSK, has been completed and a third ship, named KHARKOV, should be operational about 1981.

The KIEV has an unusual design. The ship has a full load displacement of approximately 40,000 tons and is 900 feet long. She has an angled flight deck some 600 feet long and an island superstructure to starboard in the tradition of Western carriers. However, the forward part of the ship is similar to Soviet

**The Soviets classify the KIEV as a "large anti-submarine warfare cruiser," possibly because (1) that is her mission, (2) it was not politically acceptable to call any Soviet ship an aircraft carrier after years of deprecating remarks concerning Western carriers by Soviet military writers, (3) the Soviets may wish to project this ship as another evolutionary development of their ASW cruiser program and not a copy of the Western aircraft carrier concept, or (4) the Soviets wished to circumvent some interpretations of the Montreux Convention which proscribes warship passage through the Turkish Straits.*

The MOSKVA was the Soviet Navy's first aviation ship. She and her sister ship LENINGRAD, completed in 1967-1968, are guided missile cruisers forward and helicopter carriers aft. They can serve in the roles of missile cruisers, fleet flagships, or anti-submarine ships, carrying 18 ASW helicopters for the last role.



The Soviet Navy introduced several new and relatively radical cruiser and destroyer designs during the 1960s. At top is a KYNDA-class cruiser with eight tubes for the long-range SS-N-3 anti-ship missile. The four tube launchers are evident forward and aft of the ship's superstructure in this view. At center is a KASHIN-class anti-aircraft missile destroyer. This ship introduced gas turbine propulsion to large warships. At bottom is a KRESTA II-class ASW cruiser. The KRESTA II is a multi-mission ship, heavily armed and fitted with a variety of electronic systems.

missile cruisers with anti-ship, anti-submarine, and anti-aircraft missile launchers, torpedo tubes, and multi-purpose guns. The ship has a profusion of electronic sensors, electronic warfare systems, and a number of advanced communications devices.

The lack of aircraft arresting wires and catapults on the flight deck limits the KIEV to helicopters and VSTOL aircraft. A mix of about 20 HORMONE helicopters and 15 FORGER VSTOL aircraft is believed a probable air group, although this mix could be changed to meet varied mission requirements.

Although the primary mission of the KIEV class is stated by the Soviets as ASW, the ship also has a significant anti-ship capability in its cruise missile battery. There are eight large launching tubes, with a reload capability, probably for SS-N-12 missiles, which are an improvement on the older SS-N-3 anti-ship missiles. The HORMONE-B helicopter has been seen aboard the KIEV, with that helicopter being capable of providing over-the-horizon targeting information for the SS-N-12 missiles, which have a maximum range of approximately 300 nautical miles. (Most of the embarked HORMONE helicopters are for ASW.)

So far the Soviets have revealed little of the FORGER's role. The plane is probably intended for use in the air defense, but it could well be employed in other roles, including anti-ship, reconnaissance, close air support, or ASW. Tactical VSTOL technology is in its infancy with only FORGER and the British-designed HARRIER in service in significant numbers.* It is evident that this type of aircraft is destined to be widely deployed in the larger navies of the world. Although this first Soviet effort at an operational VSTOL may be relatively limited when compared to other front-line tactical aircraft, it is important to remember that it represents the beginnings of a most significant and growing trend in the Soviet Navy—a sea-based, fixed-wing air capability.

The KIEV is the second generation of Soviet "aviation ships," following the helicopter carrier-missile cruisers MOSKVA and LENINGRAD, which were completed in 1967 and 1968, respectively. These earlier ships also were of a radical design, being essentially missile cruisers forward with a clear flight deck aft for operating some 18 HORMONE anti-submarine helicopters. They are rated as "anti-submarine cruisers" by the Soviet Navy and have

been used in that role as well as serving as task force and fleet flagships.

Although helicopters are the main weapon of the MOSKVA-class ships, each helicopter cruiser has anti-aircraft and anti-submarine missiles, ASW rockets, torpedo tubes, and guns. Advanced radars, sonars (both hull mounted and variable depth), and advanced electronic warfare equipment are fitted in the ships. They thus combine the full weapons-sensor suite of a guided missile cruiser with a large squadron of ASW helicopters.

There have been press reports that a larger aircraft carrier — possibly of 60,000 tons displacement — will emerge from Soviet shipyards in the 1980s.

Cruisers

Late in 1962 the Soviets sent to sea a new type of warship, the first KYNDA-class guided missile cruiser. This ship was of light cruiser size, displacing about 5,000 tons full load and measuring 465 feet in length. Like their U.S. contemporaries, the four KYNDA-class ships were armed with anti-aircraft missiles, multi-purpose guns, and anti-submarine weapons.

But most significant was the main battery of the KYNDAs: eight tubes for the SS-N-3 anti-ship cruise missiles and eight reload missiles in the ship's superstructure. With a maximum operational range of some 250 nautical miles, except for aircraft the SS-N-3 is one of the world's longest-range operational weapons for use against ships. When fired at ranges beyond the horizon (about 25 miles), the SS-N-3 requires midcourse guidance. Still, the missile allowed a Soviet KYNDA to out-range every Allied warship except for an aircraft carrier. Thus, Admiral Gorshkov attempted to counter the U.S. superiority in aircraft carriers with another type of warship rather than competing with the United States in a category where it had overwhelming superiority.

After producing the four KYNDA-class ships during the early 1960s, in 1967 Soviet yards began turning out the KRESTA I of slightly larger dimensions (7,000 tons and 510 feet). In this ship the Soviets reduced the number of long-range SS-N-3 launchers from eight to four, but increased the twin anti-aircraft missile launchers from one to two, and added a helicopter hangar. This permits the KRESTA to maintain a HORMONE helicopter on board.

The KRESTA I was apparently an interim class, pending the final development of an ASW cruiser design, and only four ships were built. The next cruiser off the Soviet building ways was the slightly

*The HARRIER is flown by the Royal Air Force, with the AV-8A version in service with the U.S. Marine Corps and the Spanish Navy.

larger KRESTA II (7,500 tons and 520 feet).

With the KRESTA II class the Soviets changed the main weapon from the long-range SS-N-3 to eight launchers for the SS-N-14 ASW missile with a range of about 25 miles. This missile change apparently reflected the Soviet shift in missions discussed earlier, from purely anti-carrier to anti-submarine and selective sea control. In addition, the KRESTA II has improved anti-aircraft missiles and more advanced electronics. Nine of the KRESTA II class ships have gone to sea since 1970 and construction of this class continues.

Another new missile cruiser was introduced in 1973 with completion of the first ship of the KARA class. The size trend in surface warships continued, with this ship having a displacement of 9,700 tons and a length of about 570 feet. Again, there were improvements in weapon and sensor capabilities, and there also was a concomitant increase of operating range with the larger size, demonstrating the greater distances of Soviet maritime interests.

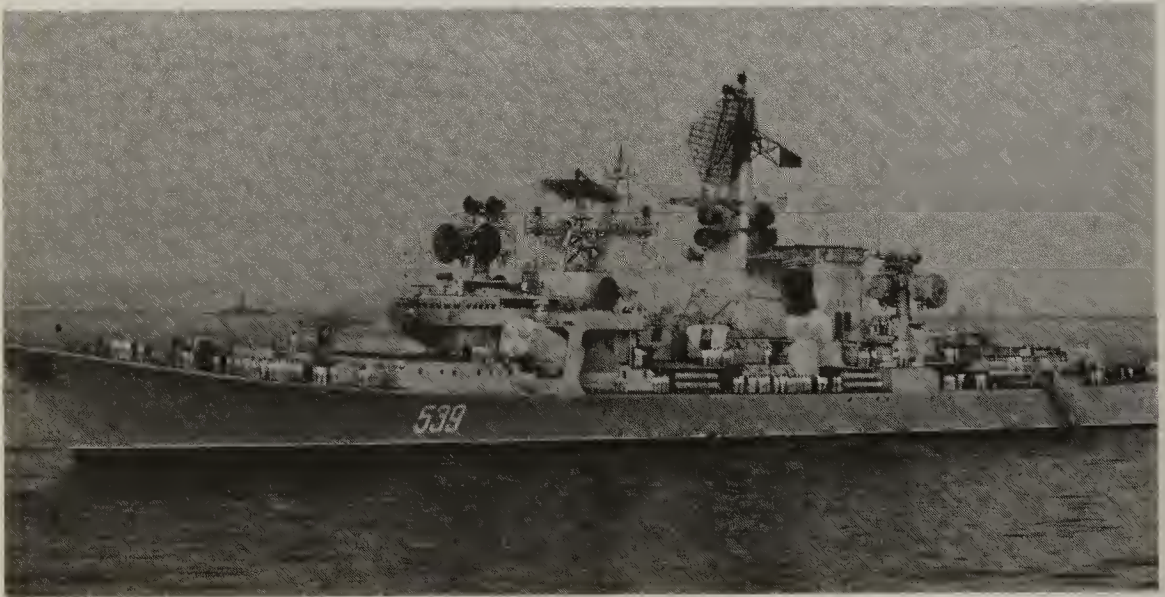
The KARA-class ships are gas-turbine propelled and are more heavily armed than any similar size ships of other navies. The KARA's main weapons are the same as in a KRESTA II, but with two additional launchers for short range anti-aircraft missiles, a heavier gun battery, and improved radars. Five KARA-class cruisers are in service and additional ships are under construction.

Beyond the succeeding classes of anti-ship missile cruisers produced by Soviet yards since the early

1960s, the Soviet Navy has retained a number of the older SVERDLOV class large cruisers built during the 1950s. Several of these ships remain in service with an all-gun armament (12 guns of six-inch caliber). It is interesting to note that while almost all of the gun cruisers of the world's other navies have been retired, the Soviets continue to modernize and operate these ships.

One SVERDLOV-class cruiser has a "refitted" twin launcher for long-range anti-aircraft missiles in place of a six-inch gun turret, while two other ships have been converted to "command ship" configurations. Amidships these two ships have been fitted with additional spaces for an admiral and his staff, satellite communications systems have been installed, and short-range missile launchers and rapid-fire "Gatling" guns are provided for anti-aircraft/missile defense. These two modified SVERDLOVs, as well as the aviation ships, provide the capability for improved command and communications, especially in remote areas such as the Indian Ocean.

Following the KRESTA II and KARA classes of multi-purpose cruisers, in the late 1970s the Soviets began construction of a considerably larger, nuclear-propelled surface warship. (The first Soviet nuclear surface ship was the icebreaker LENIN, completed in 1960. Additional nuclear ships of this type were built in the 1970s.) The nuclear cruiser, estimated to have a displacement of about 25,000 tons, is more than twice the size of the KARA and the latest nu-



The KARA is the latest Soviet cruiser class to go to sea. Displacing some 10,000 tons, the KARA-class ships are the world's largest warships with gas turbine propulsion. They have gun, missile, and rocket systems for use against hostile aircraft, surface ships, and submarines, plus torpedo tubes and facilities aft for an ASW helicopter.

clear cruisers built by the United States. Nuclear propulsion will enable the ship to operate in remote areas at high sustained speeds on independent missions, or as part of a carrier task force with a KIEV-class flattop or larger aviation ship.

Destroyers

Since the early 1960s, the Soviets have added five new classes of destroyers to their active fleet. The older destroyers are equivalent in size to many Western destroyer classes, whereas later classes are somewhat smaller, albeit more heavily armed than contemporary U.S. destroyers. For example, the Soviet KRIVAK-class destroyer has been described by a U.S. Chief of Naval Operations as "ton for ton, the heaviest armed and most effective destroyer afloat." However, in part because of the ship's small size (approximately 3,600 tons), in 1978 the KRIVAK was redesignated as a "frigate" by U.S. intelligence analysts.

The first post-World War II destroyer construction program was the SKORYY class. Over 70 ships of this class were built and several still remain in active service. They are rarely seen beyond Soviet coastal waters. Twelve of these ships have been transferred to Egypt, Poland, and Indonesia.

In the 1950s and early 1960s the Soviet Navy successively introduced the KOTLIN-class gun destroyer (27 built), the KILDIN-class anti-ship missile destroyer (4 built), and the KRUPNYY-class

anti-ship missile destroyer (8 built). The KOTLINS have received various modifications, over the years, including Surface-to-Air Missile (SAM) refits with nine now classified as SAM KOTLINS. The KILDENS were built on KOTLIN hulls and have also been modified in recent years, including the installation of four improved STYX anti-ship missiles. All eight of the KRUPNYYs have had their early anti-ship missile systems replaced by eight 57-mm guns forward, a twin SAM launcher fitted aft, and additional ASW weapons and equipments were added. Thus reconfigured, these ships are now called the KANIN class.

From early 1963 through 1967 Soviet shipyards delivered 20 KASHIN-class guided missile destroyers. These are large ships of 5,200 tons and 470 feet. They are armed with two large anti-aircraft missile launchers, anti-submarine rocket launchers, five torpedo tubes, four 76-mm multi-purpose guns, and mine rails. Some are being refitted with four short-range, anti-ship missiles and variable depth sonar.

Their most distinctive features are four large funnels in tandem that indicate gas-turbine propulsion. These were the world's first large warships with gas turbines and they give the KASHINs an estimated top speed of over 36 knots for brief periods. The engines in the KASHIN are essentially aircraft jets configured to turn two propeller shafts.

Marine gas turbines, provide a high horsepower-to-weight ratio, and are easy to maintain and replace. They can be started in a few minutes after being shut



The KRIVAK-class destroyer, also propelled by gas turbines, is primarily an ASW ship. However, the KRIVAKs have torpedo tubes and guns, with later ships than the one seen here having two guns of about 100-mm caliber aft in place of the four 76-mm AA weapons in twin gun mounts. These ships lack the helicopter facilities in contemporary U.S. destroyers and frigates.

down, and can rapidly accelerate, unlike steam turbines that require a steam buildup for acceleration. (In the fall of 1974 one KASHIN class ship sank in the Black Sea, apparently as the result of internal fire and explosions.)

Soviet success with the KASHIN propulsion system has led to its application in the smaller KRIVAK-class destroyers and the larger KARA-class cruisers. (The latter ships are the world's largest warships with gas turbine propulsion.)

The newest destroyer of the Soviet Navy is the KRIVAK class, the first of which went to sea in 1970. These ships displace about 3,500 tons and have an overall length of 405 feet. The KRIVAKs are armed with both anti-submarine and anti-aircraft missiles, having a four-tube launcher for the SS-N-14 ASW missile and two reloadable launchers for the SA-N-4 short-range SAM missile. In addition, the ship has anti-submarine rockets, eight torpedo tubes, mine rails, and four 76-mm guns. In the later ships two guns of about 100-mm size replace the 76-mm weapons. These weapons are complemented by advanced electronic systems, including both hull-mounted and variable depth sonars. The KRIVAKs are being built at a rate of three to four per year.

Few of the destroyers built since World War II have been scrapped. Most of these ships are still in active service, with SKORYYs providing most of a small reserve force.

Frigates

The Soviet Navy has a large number of frigates which operate with fleet formations on the high seas as anti-submarine escorts and as coastal patrol ships. These ships are primarily small frigates of the MIRKA and PETYA classes, displacing approximately 1,100 tons and having a length of 270 feet. They have combined diesel and gas turbine power plants. Considerably smaller than the U.S. Navy's frigates, these ships nonetheless deploy to the Mediterranean, the Caribbean, and the Indian Ocean as well as into the Atlantic and Pacific Oceans.

Production of the MIRKA and PETYA classes apparently ended in the 1970s. They were replaced on the building ways by the KONI-class ASW ship. These 2,000-ton, 320-foot ships, however, appear more suitable for coastal patrol duties than open-ocean operations.

B. SMALL COMBATANTS

The Soviet Union operates more small combat

craft—missile, torpedo, patrol, and mine craft—than the remainder of the world's navies combined.

Probably the most publicized of these craft are the OSA missile boats which displace some 200 tons and are 130 feet long. Each OSA carries four launchers for the SS-N-2 STYX missile which has a range of some 23 miles. The OSA II boats carry improved missiles which probably have a greater range. With a top speed of 34 knots and two rapid-fire, twin 30-mm gun mounts, the OSAs are potent ship killers. Over 120 OSAs are currently in Soviet service and about 100 have been transferred to other navies (as have some 55 of the earlier, two-missile KOMAR missile boats).

The small size of the OSA obviously limits the craft's operating range and rough weather capabilities. To overcome these limitations, in 1970 the Soviets introduced the NANUCHKA-class missile ship into service. This missile ship displaces almost 1,000 tons and is 230 feet long. The NANUCHKA has a small SA-N-4 anti-aircraft missile launcher forward and a twin 57-mm gun mount aft. The main battery consists of six tubes for the SS-N-9 missile. This anti-ship weapon has a maximum range estimated at about 60 miles. Again, the NANUCHKA is one of the heaviest armed warships of this size in any navy. A modified version of this ship carrying four SS-N-2 missiles was recently sold to India.

A new hydrofoil missile boat, the SARANCHA, has been identified. This craft is smaller than the NANUCHKA and probably mounts only four SS-N-9 missiles.

The GRISHA-class patrol escort is one of the larger and more capable of the small combatants. A diesel-gas turbine powered ship, the GRISHAs are armed with the SA-N-4 surface-to-air missile launcher, torpedo tubes, anti-submarine rockets, and twin 57-mm guns. Like the NANUCHKA, this craft has a significant capability for its size and, although primarily used for coastal anti-submarine warfare and patrol duties, has on occasion deployed to the Mediterranean.

Besides the aforementioned ships, the Soviet Navy has large numbers of a variety of classes of small combatants: patrol boats, torpedo boats, hydrofoil patrol boats, submarine chasers, motor gunboats and river monitors. The maritime arm of the KGB (the state security police) also operate several classes of small combatants.

The Soviet Navy's minewarfare force is also larger than that of the rest of the world's minewarfare forces combined. Almost 300 ocean and coastal minesweepers, plus a number of minesweeping boats,



The Soviet Union operates large numbers of inshore and coastal combatants. Some of these ships and craft periodically operate in regional seas, such as the Mediterranean where this NANUCHKA was sighted. The ship has six SS-N-9 missiles with a range of about 60 nautical miles. The ship also has a retractable anti-aircraft missile launcher forward and twin 57-mm guns aft.

make up the active force. The classes of ocean minesweepers (600 to 900 tons) includes the NATYA, YURKA, T-58 and T-43 classes; and the coastal minesweepers (200 to 400 tons) include the SONYA, ZHENYA, VANYA, and SASHA classes.

The Soviet Navy uses these minewarfare ships for a variety of tasks besides their primary function, such as patrol and picket duty. Besides this large force of minewarfare ships, it is estimated the Soviets also maintain the world's largest stock of mines of numerous different types.

C. SUBMARINES

The Soviet Navy long has been a world leader in operating submarines. Beginning in the late 1930's, the Soviet Navy generally has had more undersea craft than any other navy.

Today, the Soviet submarine force numbers about 330 units. In discussing them one must address three specific categories:

- Torpedo attack submarines—submarines that attack an enemy surface ship or submarine using only torpedoes.
- Cruise missile submarines—submarines that fire anti-ship missiles as well as torpedoes.
- Strategic ballistic missile submarines—submarines armed with long-range, nuclear missiles for striking strategic land targets.

The Soviet Navy is operating a total of about 150

nuclear powered submarines compared to some 110 in the U.S. Navy.

Attack Submarines

The Soviet Navy operates about 190 attack submarines. Most are diesel-electric powered and many are of recent construction. About 40 of the torpedo attack submarines are nuclear powered, being of the NOVEMBER, ECHO, and VICTOR classes. The last is believed to be among the fastest submarines in service today. An improved VICTOR II class is now in production while prototypes for what may be more-advanced classes have been observed. The Soviet Navy continues to build diesel powered submarines, the FOXTROT class for overseas sale (India and Libya) and the new TANGO class. Soviet writers have noted that diesel-electric submarines offer a quiet-running, highly capable platform which can operate in shallower waters than the nuclear powered boats and at a fraction of the construction cost.

The prime weapons of these attack submarines are anti-submarine and anti-ship torpedoes, but mines also can be carried. The newest submarines have a rocket-propelled ASW weapon as well.

Cruise Missile Submarines

Building on German experiments during World War II, both the U.S. and Soviet navies experimented



Aircraft and submarines armed with cruise missiles are the principal anti-ship forces of the Soviet Navy. At top is a CHARLIE-class submarine which has eight submerged-launch SS-N-7 missiles and, below, an ECHO II with eight SS-N-3 missiles fired from the surface. Both of these classes are nuclear propelled and can operate in virtually any ocean area.



with missile-launching submarines after World War II. In the U.S. Navy this effort evolved into the REGULUS cruise missile program. Although the REGULUS could be used against ships, the lack of a Soviet surface fleet in the 1950s led to American development of the REGULUS as a strategic weapon for strikes against Soviet ports and cities.

The Soviet Navy developed cruise missile submarines in the 1950s for strategic attack and as part of a strategy to counter U.S. aircraft carriers. Initially,

existing submarines were converted to fire the long-range SS-N-3 missile. Then, newer submarines designed to carry the SS-N-3 joined the Soviet fleet, the diesel-powered JULIETT class and the nuclear-powered ECHO I and II classes.

After producing 50 submarines of the JULIETT and ECHO classes, the Soviets completed the first CHARLIE I-class SSGN in 1968 with the improved CHARLIE II following several years later. These nuclear powered submarines can fire eight short-

range, 30-mile anti-ship cruise missiles while remaining submerged. Although the CHARLIE missile range is less than that of submarines armed with the SS-N-3, the latter submarines must surface before firing their missiles. The underwater launch capability of the CHARLIE makes this craft one of the most potent anti-ship submarines in service today. All of these cruise missile submarines also have conventional torpedo tubes.

The Soviet Navy's cruise missile submarine and their missile-armed bombers form the most potent threat to Allied naval forces, especially when within range of Soviet land bases where the Soviets can launch coordinated attacks using reconnaissance aircraft to provide the guidance for submarine-launched missiles.

Ballistic Missile Submarines

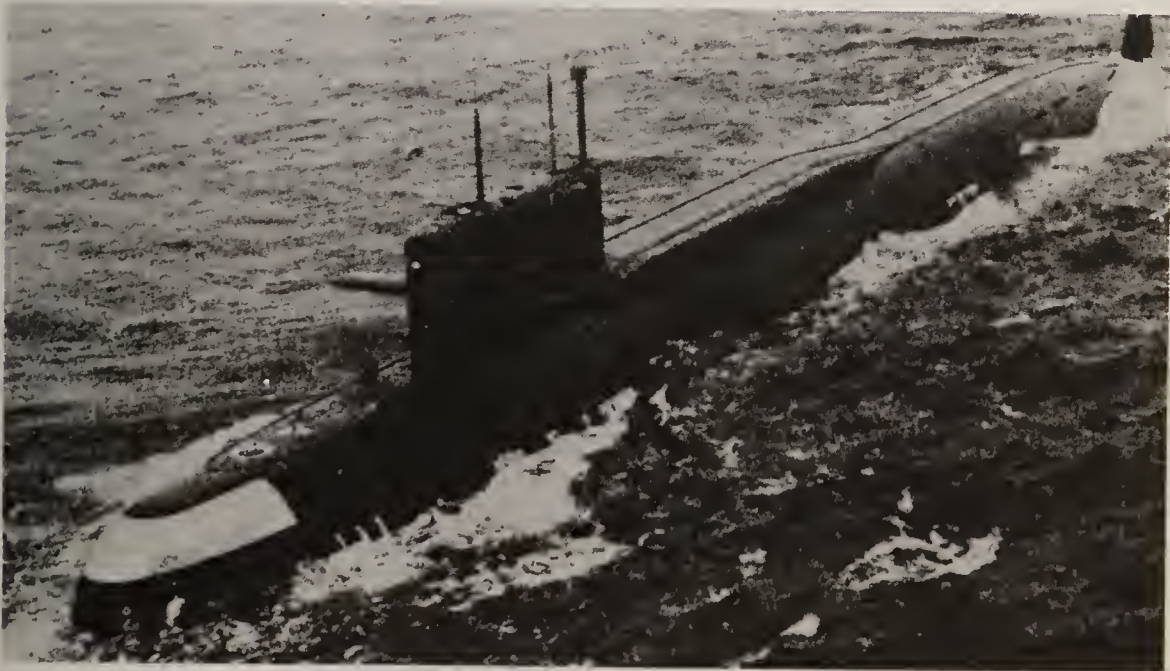
The development of nuclear weapons led to another role for the submarine, that of strategic or ballistic missile attack against land targets. Submarines are valuable in this role because the difficulty of their detection in the ocean depths makes them highly survivable against hostile attack.

As discussed earlier, the Soviets began converting existing diesel-powered submarines in the mid-1950s

to fire short-range Submarine Launched Ballistic Missiles (SLBM). Then, in the early 1960s the GOLF-class diesel and HOTEL-class nuclear SLBM submarines were completed. These submarines were limited by mechanical difficulties, short-range missiles, and the requirement for surfacing to launch their missiles. (Most of these submarines were later provided with a submerged missile launch capability and improved weapons.)

Today, the Soviet Navy has an SLBM force that already exceeds that of the U.S. Navy in numbers of submarines and in missiles. By the end of 1974 the Soviet Navy had 34 of the YANKEE-class SSBNs in service, each carrying 16 nuclear-tipped missiles with a range of at least 1,300 nautical miles (later increased to about 1,600 miles). During 1973 the first of the larger DELTA-class submarines was completed. The early DELTAs displace some 9,000 tons submerged and have an overall length of about 450 feet. The DELTA I has 12 tubes for the SS-N-8 missile with an estimated range of over 4,000 nautical miles, the longest-range submarine weapon in existence. The DELTA II carries 16 SS-N-8 SLBMs and is about 50 feet longer than the DELTA I. The DELTA class is the largest submarine ever built.

The Soviets have produced an advanced version of the SS-N-8, designated the SS-NX-18, which probably



The 34 YANKEE-class strategic missile submarines completed since 1967 were the "second generation" Soviet SSBNs. More than 20 later DELTA I/II submarines are now at sea, with some sources indicating a still more advanced SSBN, the so-called TYPHOON class, also being under construction. An intensive submarine missile development effort has accompanied their construction.



The Soviet Navy flies over 500 twin-jet BADGER aircraft in the missile strike, reconnaissance, electronic, tanker, and training roles. This BADGER was photographed while looking over a U.S. carrier in the Norwegian Sea. With the BADGER is a U.S. Navy F-4 PHANTOM fighter.

is being provided to some of the DELTA-class SSBNs. This missile is the first Soviet SLBM to have Multiple Independently targeted Re-entry Vehicles (MIRV), carrying as many as three warheads which can be armed at separate targets. The SS-NX-18 is more accurate, if not longer ranged than its predecessor. The SS-NX-17 is another advanced missile, apparently developed as a replacement for the SS-N-6 in the YANKEE class. It is the first solid propellant SLBM built by the Soviets. The SS-NX-17 uses a post-boost vehicle which would allow it to carry a MIRV package. This new missile will probably have increased accuracy and range capabilities compared to the SS-N-6.

The rumored TYPHOON-class missile submarines, if constructed, could be larger than the DELTAs, and possibly will carry SS-NX-18 or more advanced missiles.

D. AIRCRAFT

Soviet Naval Aviation (SNA) is completely subordinate to the Soviet Navy, with squadrons being assigned to each of the four fleets under an aviation

officer who reports directly to the fleet commander. The naval air arm consists of almost 1,300 aircraft, all of which are based ashore except for helicopters assigned to various cruisers, and the helicopters and VSTOL aircraft that fly from the aircraft carrier KIEV.

Soviet naval aviation currently has four basic missions:

Reconnaissance and Surveillance

Naval aircraft are employed in long-range reconnaissance ("recce") and ocean surveillance, with some aircraft equipped to provide mid-course guidance for anti-ship missiles launched from surface ships, submarines, and other aircraft. Reconnaissance aircraft now in use include about 50 of the larger BEAR-D turboprop reconnaissance planes; about 100 twin-jet BADGER aircraft, with about the same performance as the now-discarded U.S. B-47 jet bombers; and, a few BLINDER jet aircraft that have a supersonic dash speed. Additionally, the MAY maritime patrol aircraft are used for surveillance and reconnaissance missions.

These aircraft and others flown by SNA are described in Appendix D.

Anti-Ship Strike

The prime striking force of Soviet Naval Aviation consists of some 290 twin-jet BADGER aircraft which are fitted to carry one or two of several types of anti-ship cruise missiles which have "stand off" ranges varying from 55 to over 300 miles. Some missiles have variable flight paths to help penetrate ship defenses.

Soviet Naval Aviation also flies the twin-jet BACKFIRE, a supersonic aircraft with variable-swing wings. This plane carries stand-off missiles and is expected to eventually replace the BADGER in strike squadrons. The Navy is receiving this aircraft at about the same rate as Long-Range Aviation (the strategic bombing force). The BACKFIRE greatly increases the capability and extends the range at which SNA strike aircraft can attack western surface forces such as aircraft carriers or amphibious ships.

The introduction of aircraft carriers and FORGER aircraft may give the SNA another dimension of anti-ship strike. The FORGER can be fitted with short-range air-to-surface missiles, rockets, or bombs for use against ship or shore targets.

In addition to naval aircraft armed with anti-ship missiles, certain BEAR and BADGER bombers of Soviet Long-Range Aviation can be used for attacks against shipping and these aircraft regularly participate in naval exercises. Most of these strike aircraft can be refueled in-flight by naval BADGERs fitted as tankers as well as Long-Range Aviation tankers.

Anti-Submarine

The Soviet Navy has a large force of fixed-wing aircraft and helicopters configured for submarine detection and attack. This force currently includes about 15 ASW configured BEAR-F aircraft, 55 MAY turbo-prop aircraft that resemble the U.S. P-3 ORION, and 100 MAIL twin-engine flying boat aircraft. These aircraft operate from Soviet land bases to search out seaward areas for foreign submarines; they carry a variety of detection equipment as well as ASW depth bombs and torpedoes.

An increasing number of anti-submarine helicopters are being flown by the Soviet Navy. The HORMONE, a twin turboshaft helicopter, is flown from the newer Soviet cruisers, as well as from the helicopter carriers MOSKVA and LENINGRAD, and the KIEV-class aircraft carriers. An ASW version of the

HIP helicopter, which has been named the HAZE by Western intelligence, is now entering SNA inventory. Because of its larger size it is unlikely to be used on existing Soviet warships. It is more likely a replacement for the older, shore-based, HOUND ASW helicopters.

The aircraft carrier KIEV operates both ASW and missile targeting variants of the HORMONE. From extensive experimental work in VSTOL technology the Soviets developed the FORGER VSTOL tactical aircraft; both the single and two-seat aircraft have been sighted on the KIEV. This aircraft is estimated to have about the same speed as the U.S. Marine Corps' AV-8A HARRIER.

During the KIEV's first period at sea, during transit from the Black Sea to the Northern Fleet, the FORGERs embarked performed only basic flight maneuvers, giving little indication of their intended role. It is most likely the aircraft will be used in the fighter defense/attack and reconnaissance roles, but they could also be used against tactical targets ashore or in ASW support. The FORGER is no doubt only the beginning of ship-based aircraft in the Soviet Navy; more capable and supersonic shipboard aircraft could well be introduced by the 1980s.

Support

The Soviet Naval Aviation also operates some 125 transport and utility aircraft of various types. Although basic and advanced training are provided by the Soviet Air Forces, maritime operational training is accomplished within the Navy. The SNA retains a number of transports to provide a logistics capability to better meet the Navy's priority needs.

Soviet Naval Aviation has been gaining in prestige and capabilities. Recent manifestations include the construction of the KIEV-class carriers, the introduction of the BACKFIRE bomber, and promotions of the commander of Soviet Naval Aviation.

E. AMPHIBIOUS FORCES

Another area of continuing development in the Soviet Navy has been amphibious strike forces. "Marines" within the Soviet Navy are known officially as "naval infantry." Since it was reformed in the early 1960s this force has received considerable publicity in the Soviet press and is bannered as an elite combat force. Today there are an estimated 12,000 Soviet marines, mostly allocated to the four

fleets. (The U.S. Marine Corps, by comparison, numbers about 190,000 men and women.)

The missions of the Soviet marines and hence their organization and equipment differ from those of the U.S. Marine Corps. In addition to providing the spearhead for the ground forces in amphibious landings and holding captured beachheads from counterattack, the Soviet marines have the tasks of "prolonged" river crossings and defending naval bases.

The Soviet marine force is highly mechanized and is equipped with tracked and wheeled amphibious vehicles, including tanks and armored personnel carriers.

Amphibious lift for the naval infantry is provided by ALLIGATOR-class and ROPUCHA-class LSTs, and POLNOCNY-class LSMs, plus the large, new IVAN ROGOV-class ships. The Soviet amphibious forces exercise regularly in their respective fleet areas and occasionally deploy to the Mediterranean, off West Africa, and in the Indian Ocean. The Soviet Navy has over 20 LSTs and over 60 LSMs, plus numerous lesser landing craft and air cushion vehicles for amphibious operations.

Although small in comparison to the U.S. Marine Corps (the Soviet Naval Infantry is the second largest marine force in the world), the capability of even a few hundred Soviet marines afloat in a crisis area provides the Soviet Union with a valuable politico-military tool. For operations at some distance from the U.S.S.R., the Soviet amphibious assault capability is limited to landings against positions where little or no opposition is expected ashore or in the seaward approaches of the landing area. But the Soviets have in hand, or are developing, the elements necessary to provide a formidable projection capability in distant waters, if that is their choice. These include the improvement in assault lift capability, a large administrative lift ability inherent in certain ships of the Merchant Marine, the retention of a substantial gunfire support strength in the older cruisers and destroyers, the embryo development of seabased tactical air power, and a steadily improving underway replenishment capability. The Soviet Navy's ability to project tactical power ashore may be part of Admiral Gorshkov's "grand plan" in achieving a "balanced fleet."

F. SURVEILLANCE, INTELLIGENCE, AND COMMUNICATIONS

The Soviet Navy's increased operations have been matched by quantitative and qualitative increases

in related surveillance, intelligence, and communications activities. The most obvious manifestation of this aspect of Soviet naval activity has been the operations of passive intelligence collection or "spy" ships.

These ships are known in naval usage as "intelligence collectors" and are designated as AGIs. More than 50 of these ships are in service. They are often depicted in the press as disguised fishing trawlers. Rather, they are clearly naval intelligence ships, manned by naval personnel, flying the Soviet naval ensign, and easily identified by their electronic antennas. Some of the AGIs are of modified trawler design, others of modified survey-research ship design, and a number are built-for-the-purpose intelligence "factories."

Soviet AGI-type ships normally keep watch off the U.S. missile submarine bases of Holy Loch, Scotland; Rota, Spain; and Guam in the Marianas. In the Rota area the Soviets AGI also monitors traffic passing through the Strait of Gibraltar. Another AGI normally operates off the southeastern coast of the United States, a position that permits surveillance of the submarine base at Charleston, South Carolina, the aircraft carrier operating areas off Virginia and Florida, or the missile activity at Cape Kennedy. AGIs regularly dog NATO and U.S. naval exercises.

This concept of operating unarmed research ships for overt intelligence tasks was discarded by the U.S. Navy after the misfortunes of the USS PUEBLO, captured by the North Koreans, and the USS LIBERTY, severely damaged by Israeli air and naval attack. Significantly, the U.S. Navy's ships employed in this passive intelligence role during the 1960s were converted World War II-built cargo ships, whereas the Soviet craft are of relatively recent construction.

In addition to AGIs, the Soviet Navy—like other major navies—employs surface warships, submarines, and aircraft for intelligence collection.

Increasingly, the Soviet Navy is also employing advanced satellite surveillance systems. Recent naval-associated surveillance satellites have improved collection rates and processing capabilities. These include electronic intelligence (ELINT) satellites (that can "lock on" to electronic signals from Western warships to provide location information), radar surveillance satellites, and photographic satellites. The ELINT and radar satellites can provide almost real-time detection and possibly some weapon-guidance capability.

Satellite surveillance systems are in extensive use by the Soviet armed forces. According to published

reports, the Soviets apparently employed reconnaissance satellites to keep track of the 1973 war in the Middle East. Four reconnaissance satellites were orbited during the 12-day period in early October, apparently related to the Arab-Israeli war that erupted on October 6, 1973.

Satellites also are employed by the Soviet Navy for long-range communications. A number of Soviet warships and support ships have satellite communication equipment, including the KIEV-class carrier and the two SVERDLOV-class cruisers that were modified to serve as command and communication ships in remote ocean areas. These ships are fitted with advanced communications equipment, command and control spaces, and accommodations for an admiral and staff.

The Soviet Navy has developed advanced conventional communication equipment for the tactical coordination of strike forces. For example, Soviet surface missile ships, missile-armed submarines, and aircraft are able to rapidly exchange targeting information and coordinate strikes against surface ship

targets. During the large-scale OKEAN maneuvers of 1970 and 1975, the Soviets were observed to simulate several coordinated attacks against surface ships. In some phases of the multi-ocean exercise naval bombers simultaneously flew simulated strike missions in both the North Atlantic and western Pacific oceans, with warships in the different oceans being attacked at the same moment.

This requirement for simultaneous strikes in widely separated ocean areas are part of the Soviet Navy's "short war" or "first salvo" concept discussed earlier in this publication.

Published Soviet reports describing OKEAN 1970 tell of the Navy Commander-in-Chief being able to communicate with major units anywhere in the world almost instantly, knowing that an order had been executed by a ship in a "matter of minutes," having available in real time the status of air, surface, and underwater situations, including friendly and enemy orders of battle, and being able to monitor "how the [ship] commander conducts a search and accurately judges the effectiveness of his actions."



A Soviet intelligence collector (AGI) of the PRIMORYE class keeps watch on a U.S. helicopter carrier operating off Bermuda. Soviet AGIs and surveying ships regularly monitor U.S. and NATO naval exercises, and keep watch off several major bases, strategic straits, and other areas of military and maritime activity.



Section 5. SOVIET NAVAL PERSONNEL

However technically perfect the Navy may be, man is always the basis of naval forces, the ruler of all the weapons of warfare.

*Admiral of the Fleet of the Soviet Union
S. G. GORSHKOV*

The approximately 433,000 officers and men of the Soviet Navy occupy a respected position within the Soviet society. Military service in the Soviet Union is characterized as a special form of service to the state and is rewarded by a continuous deluge of praise and commendation from Soviet public leaders and the press. The Navy is also given a special place in Soviet social standing due to its close association with the revolution and connections with the party. Finally, even more attractive to the average Soviet citizen, for whom travel to a distant foreign place is a virtual impossibility, is the opportunity which the navyman has to see the world in some of the most modern warships afloat.

Most of the enlisted men are three-year draftees. The Soviet Union does not draft women for military service. Service women are employed in clerical and support positions, and are not considered an integral part of the armed services as are women in U.S. military service.

Of some 433,000 uniformed personnel of the Soviet Navy, about 175,000 serve in ships and 59,000 are attached to naval aviation. In addition to the 12,000-man Naval Infantry force, another 8,000 are assigned to coastal defense activities, about 54,000 are engaged in various stages of training, and 125,000 are used to provide shore support.

A. PRE-SERVICE TRAINING

The Soviet Law of Universal Military Service of 1967 provides for draft eligibility to age 18 and naval service of three years (two years if serving ashore, which is comparable to the other armed services).

Pre-induction military training in the Soviet Union

is under the control of the local military commission which organizes and administers the program. For those enrolled in the normal ten-year school program or a vocational technical school, military training is conducted in school during the 9th and 10th grades. Students who finish their education at the 8th grade level receive military training at their place of employment. This military training is a 140-hour program over a two-year period and includes military indoctrination, basic military skills, and weapons training.

In addition to the compulsory training, paramilitary clubs and military specialist training courses are conducted by the DOSAAF (All-Union Voluntary Society for Assistance to the Army, Air Force, and Navy). DOSAAF clubs and specialist courses are frequently oriented toward a particular service. The more general clubs prepare the inductee for military service, usually in the army, while specific courses are designed to provide the specialized training that would otherwise be conducted while the conscript was in the service. Thus, there are Navy clubs which teach sailing and seamanship skills, as well as more intensive and specific courses for radio operators, helmsmen, and divers. This training not only aids the military in reducing in-service training time, but also offers to the Soviet youth opportunities to participate in activities which would otherwise be unavailable in the Soviet society.

Taken at face value, these pre-draft and paramilitary programs appear quite formidable. On the other hand, the Soviet press periodically voices relatively strong criticism of the quality of these programs. Nevertheless, even a broad brush introduction to military training and the attendant physical exercise must ease the burden of military training. Further,

some DOSAAF trained specialists, usually in the less technically demanding specialities, can adequately fulfill their fleet assignments without further specialist training.

Upon completion of their active Navy duty the conscripts, about 125,000 yearly, are retained on the reserve lists until they are 50 years of age. This provides a large pool of semi-trained manpower, especially those men who are only four or five years removed from their active service.

B. OFFICERS

The regular sea-going Soviet naval officer is a volunteer, carefully selected, well trained, highly specialized, career man. He is more often than not a relative of a party official or another naval officer.

Schooling

The large majority of regular naval officers are now drawn from specialized naval schools. A small number of officers begin as reserves after graduation from civilian universities and a few others win promotion from the warrant officer ranks. A youth normally starts his career as a cadet at one of 11 higher naval schools after a vigorous selection and testing program. The course of study is intense and lasts five years, with the graduates receiving a National Engineering Diploma and the rank of lieutenant. Some Soviet officers begin their naval careers at about age 15 by entering the Nakhimov naval school system for young men, and then going into a higher naval school upon graduation from the Nakhimov school.

The higher naval schools can be broken down into two types: line and engineering. Six line schools graduate officers as narrow specialists in one of three areas: navigation, weapons, and anti-submarine warfare, which correspond to three of the five departments of a Soviet warship. Graduates from one of three other higher naval engineering schools and one radio-electronics school are assigned to ship radio-electronics and engineering departments. There is also a higher naval school for shore duty engineering specialists and one which trains political officers for service with the fleet. Other naval specialist officers such as medical, legal, and finance are trained in higher schools with their army counterparts. Naval aviation officers receive their basic flight training with the Air Forces.

Early Career

Upon graduation, a regular officer is assigned to

a ship for duty in the department which corresponds to his speciality (navigation, engineering, ASW, etc.). The new officer usually spends the first three to six years of his career in the same department aboard the same ship or at least in the same class of ship. During his first years at sea the new officer earns a classification as a specialist in his technical speciality to pass the examination to stand watch and for certification as a supervisor as he progresses through positions equivalent to assistant division officer, division officer, assistant department head, to department head.

Responsibilities

In the Soviet Navy the officer is both the manager of his unit and the major technical specialist. He is expected to be able to do virtually everything his subordinates can do, as well as instruct them in their duties and care for their "ideological well being." Because of the general low level of technical expertise of his enlisted men, the Soviet officer tends in some cases literally "to do everything," even the most routine maintenance. A Soviet junior officer's duties as manager, technician, instructor, and loyal party member give him a quite heavy work load. Complaints are frequent; yet, in spite of these, the typical Soviet officers appears to fulfill his duties adequately.

Command

The selection of a commanding officer is a highly subjective process based on the principle that the commanding officer of a ship should select and train his own replacement. During the early years of an officer's service, his CO evaluates his performance and eligibility for command. As a vacancy occurs the ship's captain appoints the officer of his choice as executive officer and organizes and supervises a program of study for his development. During this period of study the line officer matures from a narrow specialist to a broad generalist capable of command. Upon successful completion of the demanding command-at-sea test the officer succeeds the CO in command of the ship, or is assigned to command another ship of the same or a similar class. The length of time in an officer's first command varies with the individual and the ship, but averages between three and five years.

Those not considered qualified for command and those in the engineering categories, who by virtue of their speciality are not considered for command, become career specialists. Officers in these fields

Figure 7

HIGHER NAVAL SCHOOLS (5-YEAR PROGRAMS)

School	Location	Specialization
Frunze Higher Naval School	Leningrad	Line
Makarov Pacific Ocean Higher Naval School	Vladivostok	Line
Kirov Red Banner Caspian Sea Higher Naval School	Baku	Line
Kaliningrad Higher Naval School	Kaliningrad	Line
Nakhimov Black Sea Higher Naval School	Sevastopol	Line
Leninskiy Komsomol Higher Naval School of Submarine Navigation	Leningrad	Submarine-line
Dzerzhinskiy Order of Lenin Higher Naval Engineering School	Leningrad	Line-engineering
Sevastopol Higher Naval Engineering School	Sevastopol	Line-engineering
Popov Higher Naval Communications School	Leningrad Petrodvorets	Radio-electronics
Lenin Higher Naval Engineering School	Pushkin	Shore engineering
Kiev Higher Naval Political School	Kiev	Politics

POSTGRADUATE COURSES

Order of Lenin and Ushakov Naval Academy Imeni Marshal of the Soviet Union A. A. Grechko	Leningrad	Advanced technical and staff education (equivalent to U.S. Naval War College)
Naval Officers Technical School	Kronshtadt	Officer technical training
Higher Naval Courses	Leningrad	Officer technical training
Higher Military Academy of the General Staff (All Services)	Moscow	General staff training

continue to receive promotions while serving as department heads and on staffs afloat or ashore.

Senior Officers

Considerable emphasis is placed on post-graduate education and, after command at sea, an advanced degree is considered a prerequisite for posts of higher responsibility and flag rank. Officers with an average of six to eight years of experience, and usually after their first command, take graduate training at the Grechko Naval Academy, which is roughly equivalent to the U.S. Naval War College, or other schools

offering advanced degrees. As an alternative to study in residence at a higher naval school, an officer can obtain an advanced degree by correspondence which would include only a very limited residence study requirement.

Beyond graduate work, the senior line officer generally serves on the staff of a group of ships of the same class that he commanded. Later, a rotation between fleets and other related tours are assigned to develop broader experience. Further, either immediately before or just after making flag rank, an officer will usually attend the joint service academy for general staff officers.

Figure 8
COMPARISON OF SOVIET AND U.S. NAVAL GRADES AND RANKS

OFFICER GRADES	
Rank*	Approximate U.S. Equivalent
Admiral of the Fleet of the Soviet Union	Fleet Admiral
Admiral of the Fleet	Fleet Admiral
Admiral	Admiral
Vice Admiral	Vice Admiral
Rear Admiral	Rear Admiral
Captain 1st Rank	Captain
Captain 2nd Rank	Commander
Captain 3rd Rank	Lieutenant Commander
Captain Lieutenant	Lieutenant
Senior Lieutenant	Lieutenant (junior grade)
Lieutenant	Ensign
Junior Lieutenant	Ensign
WARRANT GRADES	
Warrant Officer (Michman)	Chief Warrant Officer Warrant Officer
NON-COMMISSIONED RANKS	
Chief Ship's Petty Officer	Master Chief Petty Officer Senior Chief Petty Officer
Chief Petty Officer	Chief Petty Officer
Petty Officer First Class	Petty Officer First Class
Petty Officer Second Class	Petty Officer Second Class
Petty Officer Third Class	Petty Officer Third Class
Senior Seaman	Seaman
Seaman	Seaman Apprentice/Recruit

*Naval aviation, naval infantry, and coastal defense personnel, although an integral part of the Navy, have "military" ranks, such as general, major, and sergeant.

For those officers in "career specialties" the logical steps after graduate training are from a position on the faculty of one of the naval schools, or a tour in one of the technical directorates (such as shipbuilding, mines, torpedoes), to a flag-rank position in his area of expertise.

Several major deficiencies clearly exist in the education and experience of the Soviet naval officer. He spends the first part of his career as a very narrow specialist, restricted to one department in one class of ship. As a result, the junior officer lacks broad experience and versatility. Often it is only upon selection as executive officer that the Soviet officer begins to develop the broader experience necessary for more senior posts. Because of the strong emphasis on collective thinking and Party-enforced discipline in the Soviet society, the junior officer lacks in strong measure personal initiative, original thinking, leader-

ship, and the willingness to take responsibility, characteristics that are necessary for command. But for those chosen to move up the promotion ladder the positions, education, and training received from mid-career on assumes that an officer selected for flag rank is both educated and experienced.

The base pay for Soviet officers initially appears nominal, but taken in combination with the total allowances and benefits which accrue to a military officer in the Soviet Union the real income is substantial. For example, naval officers are given significant additional pay for service in northern areas, for service in submarines and aircraft, for sea duty, and for command. Military officers are a prestigious and privileged class in the Soviet Union and receive extensive benefits, according to rank, beyond those of the average citizen.

A Soviet rear admiral and his staff discuss mutual interests with a U.S. rear admiral during the visit of two Soviet destroyers to Boston. Soviet naval officers tend to be more specialized than their U.S. counterparts, with a major effort being undertaken to broaden their education as they approach selection for flag rank.



C. ENLISTED MEN

The enlisted man of the Soviet Navy is a conscript with limited training and little career inclination. Conscripts are drawn from all the 16 republics within the U.S.S.R. and often those from the Asian republics speak little Russian. As conscripts are inducted into the services twice a year, this means that every six months about 15 percent of the naval enlisted strength is replaced by recruits.

Basic Training

The new inductee undergoes a nine-week basic training program, after which he is either sent to a specialist school or directly to a duty assignment. A small number of recruits that have previously completed a DOSAAF specialty are sent directly to sea duty from basic training, while those judged physically or intellectually substandard are assigned to shore duty (as librarians, store-keepers, etc.). Approx-

imately 75 percent of the men entering the Navy undergo specialist training, after which they receive their first shipboard assignment.

Shipboard Life

On his first tour of service the Soviet draftee receives low pay, even by Soviet standards (about four dollars per day), and leave totaling up to 20 days over a three-year period. During this period of service he is under close supervision and subject to continuous political indoctrination. Sea duty can best be described as vigorous. Distant deployments often include long periods in open-water anchorages and the infrequent liberty runs ashore in foreign ports are normally done in supervised groups during the daylight hours. Living conditions aboard the modern classes of Soviet ships is, by Western standards, spartan but acceptable, whereas conditions aboard the older classes, such as the PETYA and KOTLIN, are cramped and rather trying. Viewed in the relative



Soviet sailors, several with cameras, prepare to go ashore as their guided missile destroyer visits Massawa, Ethiopia. Although Soviet Navy life is spartan by American standards, modern Soviet warships are relatively comfortable and naval service provides these young men with travel and technical training opportunities not available to most of their countrymen.

terms of the civilian housing standards in which naval recruits previously lived, their shipboard accommodations are probably not considered unbearable.

D. WARRANT OFFICERS

The Soviet Navy faces a chronic shortage of senior enlisted personnel. The reenlistment rate averages only about ten percent, in part because of the national requirement that all males must serve on active duty in the Soviet armed forces. In an effort to reverse this trend the rank of warrant officer (michman) was instituted in 1971 to upgrade the status of career servicemen. At completion of compulsory service the Soviet sailor, if considered capable, is offered additional specialist and military training in a two-year warrant officer school return for a five-year reenlistment (including schooling).

The warrant officer is designated the principal interface between the officers and enlisted men. In this capacity he is given more responsibilities, and, as a result of his more extensive training and experience, he can relieve the officers of some of the more technical duties which the conscript is not qualified to perform. The benefits and privileges increase considerably as the pay, privileges, and leave offered to the warrant officer approach that of the officer. In addition, he is also offered the opportunity to achieve promotion after a number of years service.

E. SPECIALIST TRAINING

Soviet technical training is of four to six months duration and appears to graduate specialists with a rather shallow understanding of the complexities of their own speciality. Consequently, the more significant and practical training for the enlisted man is actually received after he arrives on board ship.

Once aboard ship, the enlisted man will be put under the tutelage of a more senior sailor who, along with the officers and warrant officer (michman) in his department, will begin to train him as his replacement. The new specialist begins to study for a class specialist rating. Specialists are grade rated as Master, 1, 2, and 3. If a sailor passes his 3rd class specialist test, fulfills certain requirements of the party youth organization (Komsomol), and has no disciplinary violations, he will be rated "outstanding" by his ship's captain. The number and class of specialists and the number rated outstanding is considered a significant measure in evaluating a ship's performance. It is not surprising, therefore, that over 90 percent of all seamen are at least rated 3rd class

specialists by the end of their first tour of duty.

Rudimentary school instruction and limited time and facilities for intensive shipboard on-the-job training and testing leaves the Soviet specialist capable of only the more routine functions of maintenance and general operation of a very limited range of equipment. Thus, the specialist is at best a low grade technician. To alleviate some of these shortcomings shipboard equipments are, for the most part, assembled from standard components and modules.

F. TRAINING AT SEA

At-sea training is viewed as the major method of "perfecting skills and knowledge" to maintain a high level of combat readiness. Training at sea revolves around socialist competition which entails the achievement of specified goals and objectives set by the commanding officer and political officer in conjunction with the staff. Some objectives and goals are prescribed in terms of the number of men achieving a new or higher class specialization and the number of men rated as outstanding.

Competitive drills and exercises are conducted aboard ship involving the usual variety of situations from damage control to simulated or actual firing of weapons. Fleet and inter-fleet exercises involve units competing against each other. All socialist competition is characterized by the great emphasis that is placed upon obtaining set quantitative goals. This has resulted in a number of abuses. Aside from outright cheating, other abuses involve the setting of unrealistically low goals which are easily achieved, or the more serious problem of "formalism" in which, after the goals are set, promises made to fulfill them and all the required speeches made, the whole competition is just forgotten. A further problem involves drills and exercises which are conducted in a routine, mechanical manner, thereby lacking realism and constructive value.

Obviously, the true extent to which these problems exist in Soviet training cannot be determined. Yet, if the reports of the Soviet press can be considered as one indication, it would appear that such problems are not rare in Soviet training.

G. POLITICAL ACTIVITY

All sectors of the Soviet military are subject to political indoctrination and close communist party monitoring, even more extensive than in the civilian sector. Of course, a higher percentage of Soviet naval officers are party members than in the other

services or in the civilian population. The stress upon political reliability is all encompassing and of foremost importance. This stems from the concern of the Party to maintain a military force that is completely subordinate to the Party, thereby rendering it incapable of exercising military power for political ends.

Americans generally have difficulty differentiating between the Soviet State and the Communist Party, and hence the relationship of the Navy to the Party. The difficulty is that for all intents and purposes the State and the Party are one in the same. Their key leaders are virtually the same and their goals are identical. In essence, the Politburo of the Central Committee of the Communist Party is the ruling body of the U.S.S.R. with the "state" organization primarily running the day-to-day business of the nation. Several members of the Politburo also serve on the Presidium of the Supreme Soviet (or Congress), with the Presidium being the highest state body.

Over 90 percent of all naval officers are members of the Party or at least the Komsomol (Young Communist League). It is a rare officer that has not learned that demonstrating one's political activity is essential for a successful career. A Party membership is essential to obtain command. The Party and its representatives are at all echelons of command within the armed forces and is headed in the Navy by a four-star admiral. Each ship has a political officer (zampolit) who has his own separate chain

of command. The zampolit's duties aboard ship are diverse: he directs the ideological indoctrination and monitors the political reliability of the officers and men; directs socialist competition; ensures that Party decisions are carried out; enforces discipline; and, finally, acts as both "chaplain" and social worker for the crew to promote morale.

The nature of party control sets up groups within the command structure; the CO and line officers comprise one part, and the political officer and the party organizations the other. Problems and tension are sometimes created between groups as they perform their functions. On one hand, an officer's military authority can be undermined since, as a member of the Party, he is as susceptible to party criticism and discipline as any other Party member. On the other hand, the political officer, while wearing the uniform of a naval officer, was in the past clearly not nautically qualified and, in many cases, was looked down upon by the professional naval officers. In recent years, however, there has been a trend toward giving the political officer practical naval experiences as a line officer prior to entering the political field.

There is a significant commonality of interest between the zampolit and the professional officers since both share responsibility for the successful operations of the ship and its performance in the socialist competition by which their careers are judged.

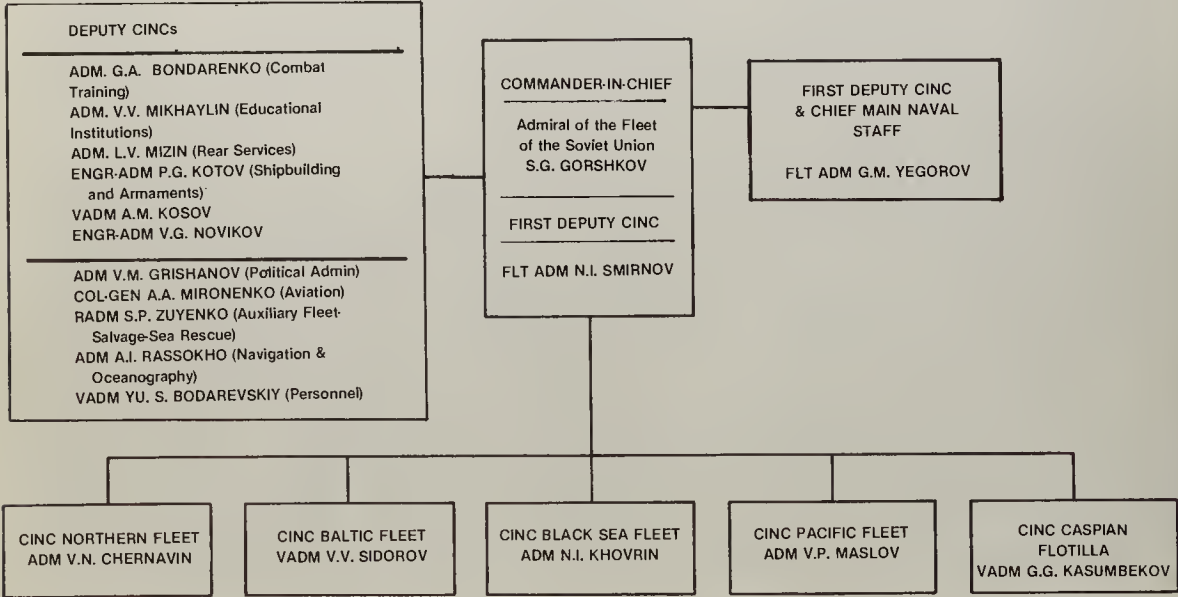


Figure 9
SOVIET NAVY HIGH COMMAND

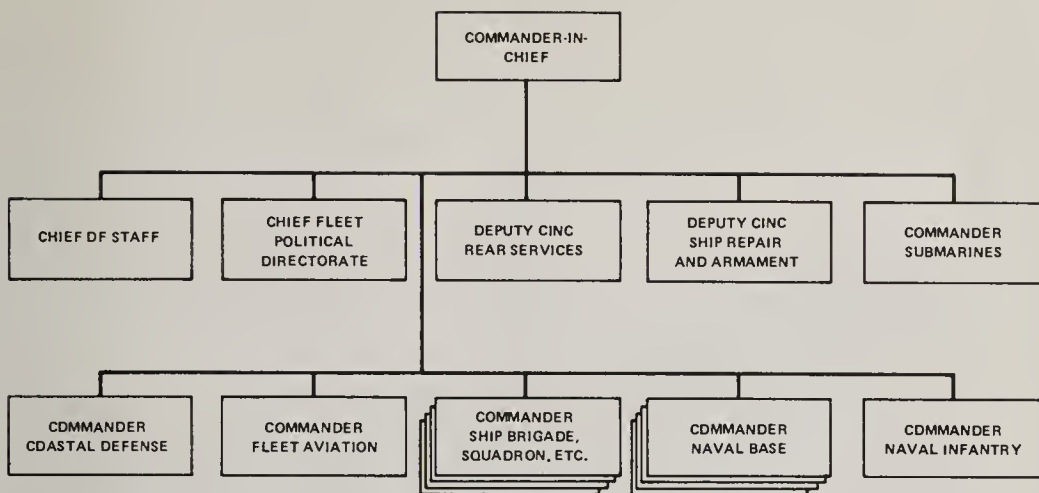


Figure 10
FLEET ORGANIZATION

H. LEADERSHIP

The highest position in the Soviet Navy is that of Commander-in-Chief (CINC). The position is currently held by Admiral of the Fleet of the Soviet Union Sergei G. Gorshkov, and carries with it the responsibilities for the operation and administration of the Soviet Navy. In addition, as head of one of the five military services, he serves as a Deputy Minister of Defense, a political position which in the United States is filled by the Secretary of the Navy. Thus, Gorshkov simultaneously holds positions which in the U.S. would be equal to Chief of Naval Operations and Secretary of the Navy. Directly below the CINC are the First Deputy Commander-in-Chief, Fleet Admiral N. I. Smirnov, who is the assistant to the CINC in the operational direction of the fleet, and Fleet Admiral G. M. Yegorov, a First Deputy and Chief of the Main Naval Staff.

At the next level are eight Deputy CINC's who are responsible for several different administrative, technical, logistical, and training functions. Additionally, there is a Navy Staff that serves the CINC

in policy and planning which is composed of the heads of several directorates. Below this level are the fleet commanders. Each fleet is headed by a flag officer with the fleet organizations structure quite similar to that of the CINC of the Soviet Navy.

Soviet flag rank officers tend to remain in their posts longer than their U.S. counterparts, with Admiral Gorshkov an exceptional case in point. His naval career spans 50 years of which over 20 have been spent as CINC of the Soviet Navy. Most senior officers of the Navy serve long tours in their respective posts. However, there have been several changes in fleet command assignments and at naval headquarters in Moscow during the past few years, possibly as a harbinger of Admiral Gorshkov's retirement in the near future.

The ages of admirals in the senior positions are in the late fifties and early sixties. A significant aspect of the Soviet philosophy toward high-level positions is that long term assignments and specialization do not necessarily destroy flexibility or effectiveness in leadership.



Section 6. OTHER SOVIET MARITIME ACTIVITIES

For the Soviet Union . . . sea is emerging as one of the important factors strengthening its economy, accelerating its scientific and technical development, and consolidating the economic, political, cultural, and scientific ties between the Soviet people and the peoples in countries friendly to them.

*Admiral of the Fleet of the Soviet Union
S. G. GORSHKOV*

The extensive and intensive use of the sea by the Soviet Union over the last two decades has not been limited to naval operations. In the best traditions of Mahan, the Soviets have embraced the whole spectrum of activities which are considered part of the Sea Power "equation"—merchant marine, fishing, oceanographic research, shipbuilding, a large pool of experienced seamen, and a knowledgeable leadership.

The Soviet concept of sea power encompasses intensive and coordinated utilization of all aspects of its natural, scientific, industrial, merchant, and naval resources in support of state policy. All the various elements of Soviet maritime activity have been developed by the deliberate and priority allocation of resources.

A. MERCHANT MARINE

The application of the Soviet basic philosophy of sea power is clearly demonstrated in the ongoing development of the Merchant Marine. At the end of World War II the Soviet merchant fleet consisted of about 400 ships totaling approximately two million deadweight tons. The ships were relatively small, old, and slow. In fact, the newest and best vessels were the lend-lease "Liberty" ships that the United States had provided the Soviets during the war.

In just three decades, the Soviet merchant fleet has emerged from that insignificant, coastal oriented fleet to rank first in the world in numbers of ships, and sixth in terms of deadweight (carrying) tonnage. The expansion continues. Today the Soviet Union has an ocean going cargo carrying fleet of nearly 1700 ships aggregating over 16 million deadweight tons. By comparison, the U.S. Merchant Marine, with

just over 500 ships equalling under 16 million deadweight tons, ranks about tenth in both number of ships and carrying capacity in world ranking.

The Soviet merchant fleet is presently operating on over 60 different trade lines, calling at over 120 countries throughout the world. Soviet merchant ships are now calling at some 70 different ports along the U.S. east, west and Gulf coasts as well as the Great Lakes. In 1975, the number of voyages made to the United States by Soviet merchant ships increased 56 percent over 1974.

The growth of the Soviet Merchant Marine has paralleled a period of equally dramatic world-wide maritime development, but the Soviet accomplishments have been unique. While the international growth has been spurred by the demand for big oil tankers, bulk carriers, and container ships, the Soviet Union has carefully directed the growth of its merchant fleet, not allowing purely commercial pressures of modern trade to dictate its composition. It is of interest to note that while most nations have reduced their passenger carrying fleets, the Soviets continue to expand theirs and today have a greater number of passenger ships than the rest of the world combined.

As a result, the Soviets today possess one of the few major merchant fleets which can perform either a peacetime commercial mission or satisfy military logistics requirements effectively and efficiently. This has been achieved by accepting some economic disadvantages in exchange for functional versatility. Rather than building only supertankers, container ships, liquid gas tankers, and bulk carriers, the Soviets have continued to improve the designs of their large, sophisticated cargo ships and small, multipurpose tankers. They also have stressed high-speed, Roll-On/Roll-Off (RO/RO) combination vehicle and con-

tainer ships. The RO/RO ships offer the Soviets considerable versatility.

The RO/RO ship is basically a floating garage that loads and unloads cargo via a large ramp. It can easily transport most forms of military hardware without ship modification and without the necessity of sophisticated port facilities. The Soviet Union has more than 20 RO/RO ships operational and numerous additional ships scheduled to be delivered in the near future. These ships can operate on the most competitive commercial routes, yet they can be reallocated with very little delay to serve as a military sealift or logistics ships.

The Soviets have ordered two large, U.S. designed SEABEE barge transport ships from Finland. The SEABEE represents another advanced concept in cargo handling; it can transport large unit loads, such as 1,000-ton barges, and has potential use in logistics or even amphibious lift operations. Cargo is loaded with a stern-mounted, 2,000-ton-capacity elevator. Up to 25,000 tons of cargo can be off-loaded in only 13 hours. A SEABEE ship, acting as a landing craft mother ship, could contribute significantly to Soviet

amphibious capabilities.

The Soviet 1976-1980 five-year plan calls for a growth in foreign trade of 30 to 35 percent, with particular emphasis on the capitalist world. In addition, the Soviet Union probably intends to use more of its merchant fleet to carry its own trade. Available figures indicate that the Soviet Merchant Marine already is carrying approximately 60 percent of the nation's imports (in comparison, the U.S. Merchant Marine carries about six percent of all U.S. imports).

The current five-year plan also projects a net gain of 3.4 million deadweight tons by 1980. If the stated goal is reached, the Soviet Merchant Marine will consist of approximately 2,000 ships totaling nearly 18.7 million deadweight tons by 1980.

The Soviet Merchant Marine has proved to be an effective tool for the extension of Soviet influence, as well as for neutralizing or eliminating Free World influence in strategic areas. Past activities of the merchant fleet in support of Soviet state policy, especially in African, Middle Eastern and Indian Ocean waters, are contributing to a growing political acceptance of the Soviet presence in these areas.



The Soviet freighter PRINNEPROVSK steams through the South China Sea after a run to Vietnam. This ship, homeported at Odessa on the Black Sea, is one of the Soviet Union's large fleet of relatively modern merchant ships. Although most Soviet merchant ships are "break bulk" ships such as the PRINNEPROVSK, many modern container and bulk ships fly the hammer-and-sickle flag.

The Merchant Marine, on a regular basis, provides a significant amount of the logistics support required by the Soviet Navy, particularly to those ships operating in waters distant from the U.S.S.R. This gives the Soviet Navy a high degree of flexibility. Additionally, these merchant ships have a much greater freedom of access to the ports of the world than navy ships or auxiliaries and thus can purchase fresh water, produce and other supplies for naval use from ports where regular naval ship visits might be denied.

Today, Soviet merchant ships operate on all oceans, calling at ports throughout the globe; if a Soviet ship is in distress in distant waters, it usually is only a matter of hours before other Soviet ships arrive on the scene to assist.

In summary, the Soviet leadership no doubt sees the Merchant Marine providing the following advantages and capabilities:

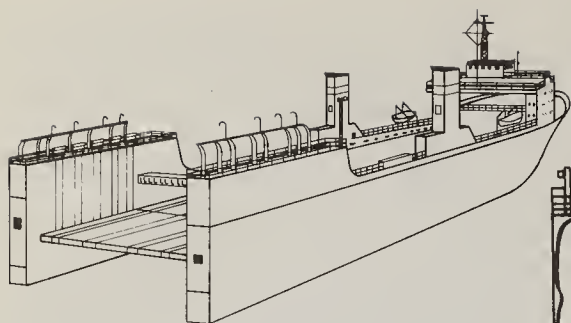
- A large national resource providing valuable income, services, and employment
- An instrument to provide support for the foreign policy of the state and to further the cause of Soviet Communism

- A source of much needed foreign currency in the continuing "balance of payments" battle
- A visible sign to the world of the prestige and power of the Soviet Union
- A training system for an expanding pool of trained seamen
- A closely coordinated logistics force providing services on a regular basis to the Soviet Navy
- A world-wide network of intelligence collection
- A highly organized, closely controlled organization which can provide military support quickly and effectively; particularly in support of amphibious operations or arms movements

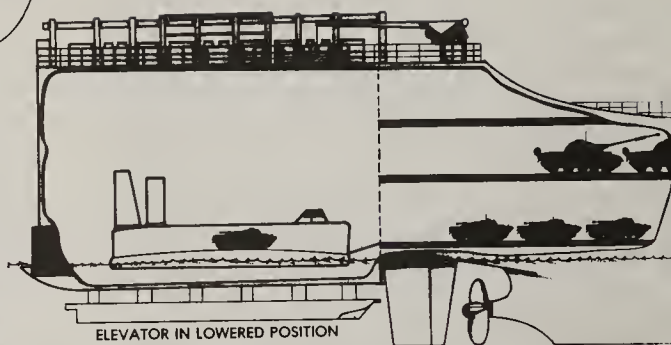
Overall, the Soviet Union is expected to continue to develop a multi-mission Merchant Marine which can compete economically in international markets and provide many other services in support of state policy, while maintaining the ability to respond rapidly to provide extensive military support. Thus, the merchant fleet provides the U.S.S.R. with a growing capability for the world-wide projection of political, military and economic influence.



The Soviet passenger liner RUSSIA moors at Odessa between transits while hydrofoil passenger craft move in the foreground. Several hundred commercial hydrofoils are used on Soviet lakes, rivers, and coastal seas, while a number of armed hydrofoils are operated by the Soviet Navy and Border Police. The craft shown here are also sold to other nations.



The shape of ships to come: Now under construction for the Soviet Union are large SEABEE barge-carrying ships. These ships, almost 900 feet long, displace some 40,000 tons, and carry loaded barges that can be unloaded by a stern elevator. The lower drawings shows how the ships could unload tanks and air cushion vehicle landing craft. Soviet merchant ships have carried tanks and other military vehicles to the Middle East, countries in Africa and Asia, and to Cuba.



A Soviet roll-on/roll-off (RO/RO) ship lowers her 60-ton-capacity stern ramp to take aboard vehicles.

B. FISHING

The Soviet Union operates the world's largest fleet with more than 4,000 ocean-going vessels. The fleet's catch in 1975 exceeded ten million tons. This placed the Soviets second behind Japan, and was almost three times the size of the U.S. catch.

Considerable resources have been invested in the fishing industry in the postwar period, with emphasis on the construction of large, ocean-going vessels equipped with elaborate fish-finding devices, processing facilities and storage capacity.

The Soviets exploit fishing grounds throughout the world's oceans with large flotillas of ships.

Groups of 100 to 200 trawlers are not unusual, and on occasion much larger formations have been reported. Trawlers which can handle up to 50 tons of fish per day also often have the facilities to filet, salt, can or freeze the catch on board. Large factory ships and refrigerated cargo ships receive both processed and unprocessed fish from the smaller trawlers. The factory ships have the necessary processing and storage facilities aboard and transfer at sea their fish products to the cargo ships which take them to market. Little of the catch is wasted, that which is not processed into food and the waste are usually turned into fish meal or fertilizer by the factory ships.



The Soviet fisheries research ship EKVATOR is one of several larger research ships employed in specialized research for the Soviet fisheries industry. Similar dedicated ships support research and training for the Soviet merchant fleet, while others perform those functions for the shipbuilding industry and related activities. Soviet maritime endeavors are highly research oriented.



A Soviet "fish factory" ship operates with part of her brood of smaller fishing craft off Cape Cod in the western Atlantic. These large ships are floating bases and can completely process and can a catch on board. The Soviet Union has more than 4,000 ocean-going fishing craft and support ships, plus numerous inshore fishing boats, all directed by a centralized ministry.

These fishing flotillas are usually self-contained "communities," supported by specialized repair ships, tugs, tankers, and fresh water vessels. On occasion these ancillary ships also support naval activities. When a Soviet HOTEL-class ballistic missile submarine encountered serious engineering difficulties in the North Atlantic in 1972 the submarine was assisted for several days by fishing support ships.

Soviet fishermen are among the highest paid workers in the U.S.S.R. They are compensated for the hardships of long voyages and climatic extremes with annual paid vacations often exceeding two months. The industry is a major employer of Soviet naval reservists.

Most fish caught by the Soviet Union (over 90 percent) is for human consumption and eaten by the Soviet people or given as aid to Soviet client states. It has been estimated that 20 percent of the Soviet protein consumption consists of seafood. Exports include such delicacies as caviar, squid, and king crab. The last is caught in great quantities off the coast of Alaska, and has been the subject of controversy and several treaties between the United States and the Soviet Union.

The Soviet's large whaling fleet also has brought it (and that of the Japanese) into a running conflict with world conservationists seeking to save a number of whale species from extinction.

Since the Soviet fishing flotillas "invaded" U.S. coastal fishing grounds in 1961 there has been much debate of Soviet "vacuum cleaner" fishing methods and the damage these were doing to the U.S. fishing industry. The establishment in 1977 of a 200-mile economic zone around the United States has placed limits on the catch and strict control of fishing activities within the zone on foreign fishing ships. Several Soviet fishing vessels have been arrested by the U.S. Coast Guard for violating these controls. The Soviets are now faced with a number of these economic zones established by countries contiguous to traditional fishing grounds.

The "universality" of fishing has led to considerable export of Soviet fishing equipment and technology to other countries. Similarly, the Soviet Union has purchased fishing craft from Japan and other nations.

It is likely that there will be a continuing increase in the Soviet fishing industry in both quality and quantity with indications that in the not too distant future the Soviets will be No. 1 in this area of maritime endeavor, which is increasing in importance as

the earth's population grows and seeks additional animal protein.

C. RESEARCH AND SURVEYING

Soviet maritime activity is supported by a fleet of ocean research and surveying ships which is larger than that of the rest of the world combined, totaling over 200 ships. These ships are separate from the naval intelligence ships (AGI) discussed in Section 4. Rather, they are engaged in academic and economic studies of the oceans. Several of these ships are Navy subordinated and manned by Navy crews, but the majority belong to civilian institutes concerned with ocean research and are civilian manned. Obviously, the civilian segments of research activities have close ties with the Soviet Navy and, again, the officers of the civilian manned ships include a number of naval reservists.

In addition, the Soviet Union operates a large number of Space Event Support Ships (designated SESS) that provide worldwide spacecraft and satellite tracking and recovery capabilities. This extensive use of SESS units is in marked contrast to the U.S. policy of primarily placing space tracking stations ashore around the world.

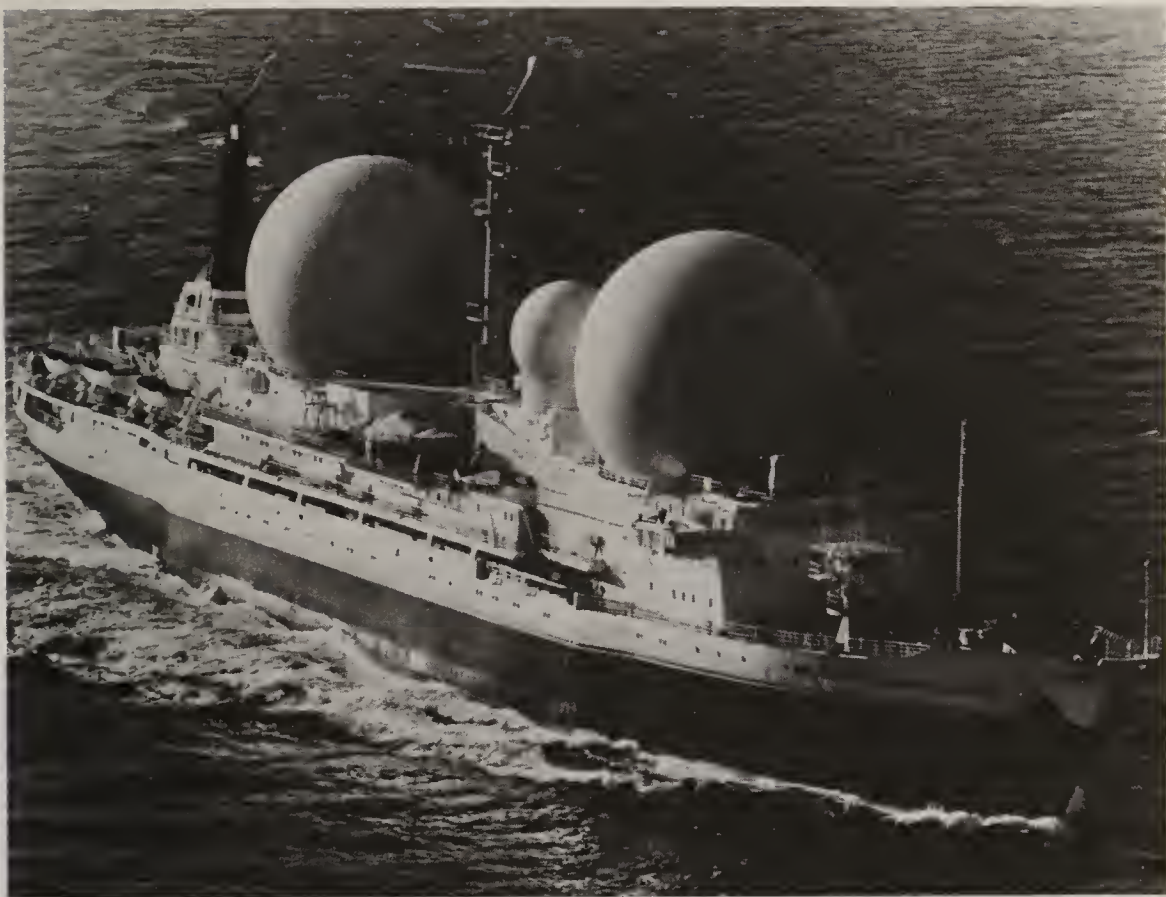
Activities of the research, surveying, and space support ships are managed by the several institutes of the Academy of Sciences of the U.S.S.R. that direct scientific research. These institutes maintain close coordination with both the Navy and the Main Fisheries Administration, with the latter organization operating several research ships. During the 1960s two modified Navy submarines also were used for fishing research.

Soviet research ships are generally of modern design with most being of Polish or East German construction. Soviet research ships vary in size from small coastal craft to the giant KOSMONAUT YURI GAGARIN, a 45,000-ton ship fitted with elaborate equipment for research into the upper atmosphere and support of space events.

D. SHIPBUILDING

The current Soviet shipbuilding industry evolved after World War II when the devastated yards of the Baltic and Black Sea coasts were rebuilt and new yards were constructed (or enlarged) on the northern and Pacific coasts to make those naval fleets independent of the traditional European yards.

Today the Soviet Union has 18 large shipyards, each employing 2,000 workers or more on a full-time



The Soviet satellite tracking ship KOSMONAUT VLADIMIR KOMAROV is one of a fleet of Soviet Space Events Support Ships (SESS) which are employed in civilian and military space and missile programs. The large, sophisticated ships of this type have secondary intelligence collection and political presence capabilities. Most of these ships are operated by civilian research institutes, with a few others being Navy manned.

basis. They rank as one of the world's largest producers of ships. However, because of Soviet emphasis on small merchant ships and fishing craft, the Soviets tonnage production is small for the number of ships produced.

Besides the output of a large indigenous ship-building industry, the Soviets also purchase considerable merchant and naval tonnage from foreign yards: naval ships, particularly amphibious ships and auxiliaries from Poland, Finland and East Germany; and merchant and fishing ships from the aforementioned countries and others, including Japan, West Germany, Sweden, and Great Britain.

Soviet submarine production is accomplished at Severodvinsk on the White Sea, the largest submarine building complex in the world; at Komsolmolsk, well up the Amur River near the Pacific coast;

at Gorkiy, which is in the center of the U.S.S.R.; with ships moving to the open sea via the extensive Soviet inland waterway system; and, at the two-yard United Admiralty complex in Leningrad. It is estimated that these yards contain physical facilities large enough to produce 20 to 25 nuclear submarines a year on a single-shift basis, if priority was given to allocating necessary resources and labor from other sources. The Soviets have been averaging about 10 to 12 new submarines annually, mostly nuclear-powered, over the last several years.

Principal surface combatants are primarily built in Leningrad and Kaliningrad on the Baltic Sea, and Nikolayev near the Black Sea where the KIEV-class carriers are being built. A number of other yards are involved in the construction of lesser combatants and other types of naval ships.

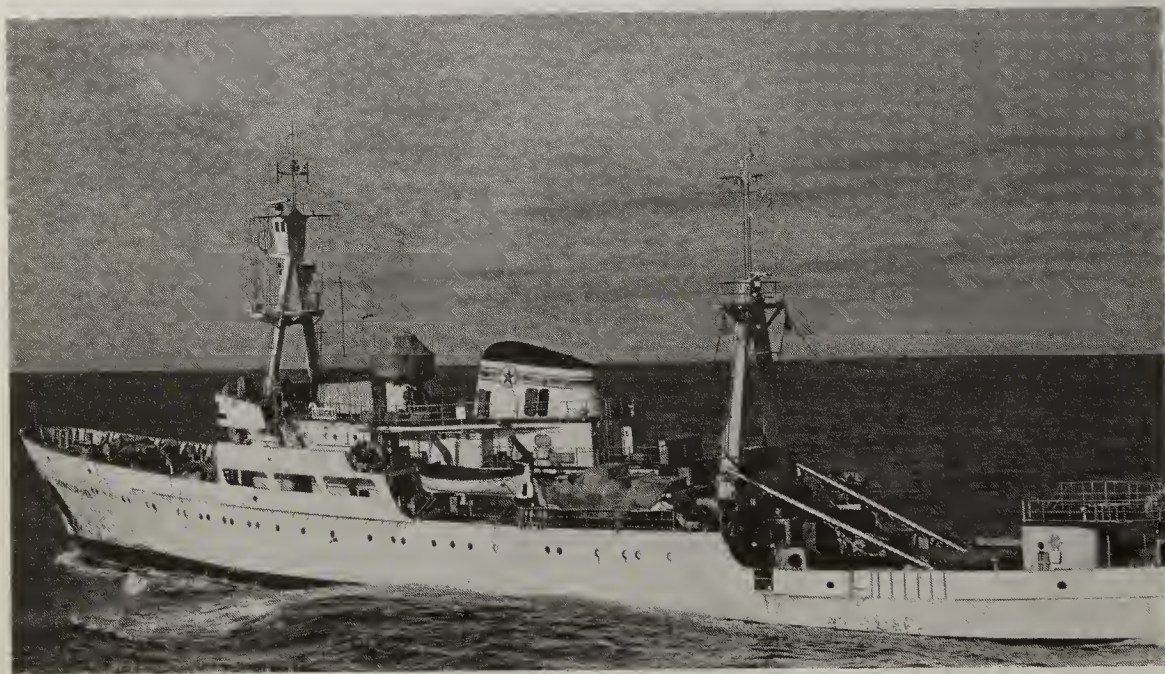
Most of the shipyards involved in naval construction also build merchant or fishing ships. The construction of all ships, naval or commercial, in the Soviet Union is managed by a single Ministry of Shipbuilding. This ministry is responsible for all yards of significant size and for most research, design and useful exchange of technologies and for the coordinated allocation of resources. Each aspect of ship design, construction, and specialized equipment is supported by a specialized research institute.

New shipbuilding equipment, from a simple hand tool to a computer-controlled cutting machine, must be approved by the Ministry of Shipbuilding before it is introduced into the industry as a standard item. Similarly, techniques initially employed for warship construction (such as modular assembly of components on a floating platform) subsequently are applied to commercial shipbuilding.

The Soviet yards make extensive use of modern

shipbuilding techniques and technologies. According to a U.S. Navy report on the subject: "In formulating a judgment on U.S.S.R. progress in automation of [ship] production . . . most of the publicized innovations are related to yards doing merchant work of a far more open nature and considerably lower priority than Soviet naval work, and it can therefore be presumed that in yards engaged in high priority work on naval ships, the facilities, equipment, and technology are at least equal and probably superior . . ." Various Soviet shipbuilding management and production techniques that have been observed have led to the conclusion that the Soviets have established a very strong and viable shipbuilding industry.

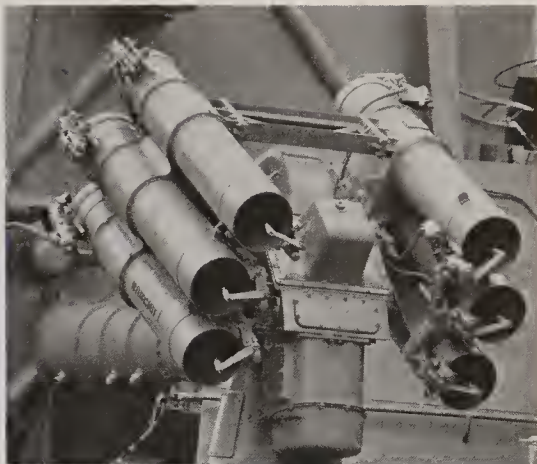
In addition to building naval and commercial ships for Soviet use, Soviet shipyards have produced ships of both categories for other nations in the Soviet bloc, western Europe, and the Third World.



The oceanographic research ship GAVRIL SARITSHEV is a large, modern oceanographic research ship. The Soviet ocean research fleet supports all Soviet maritime activities, including the Navy. The oceanographic research ships are operated by the Navy and by a number of specialized research institutes and the maritime-oriented ministries. Some of these ships are of the same class as naval intelligence collection ships.



The SA-N-1 GOA missile launcher on a Soviet destroyer. The Soviets consider this a dual-purpose, anti-ship and anti-aircraft weapon.



This six-barrel ASW rocket launcher is found in several classes of Soviet surface warships. Their range is several thousand meters.



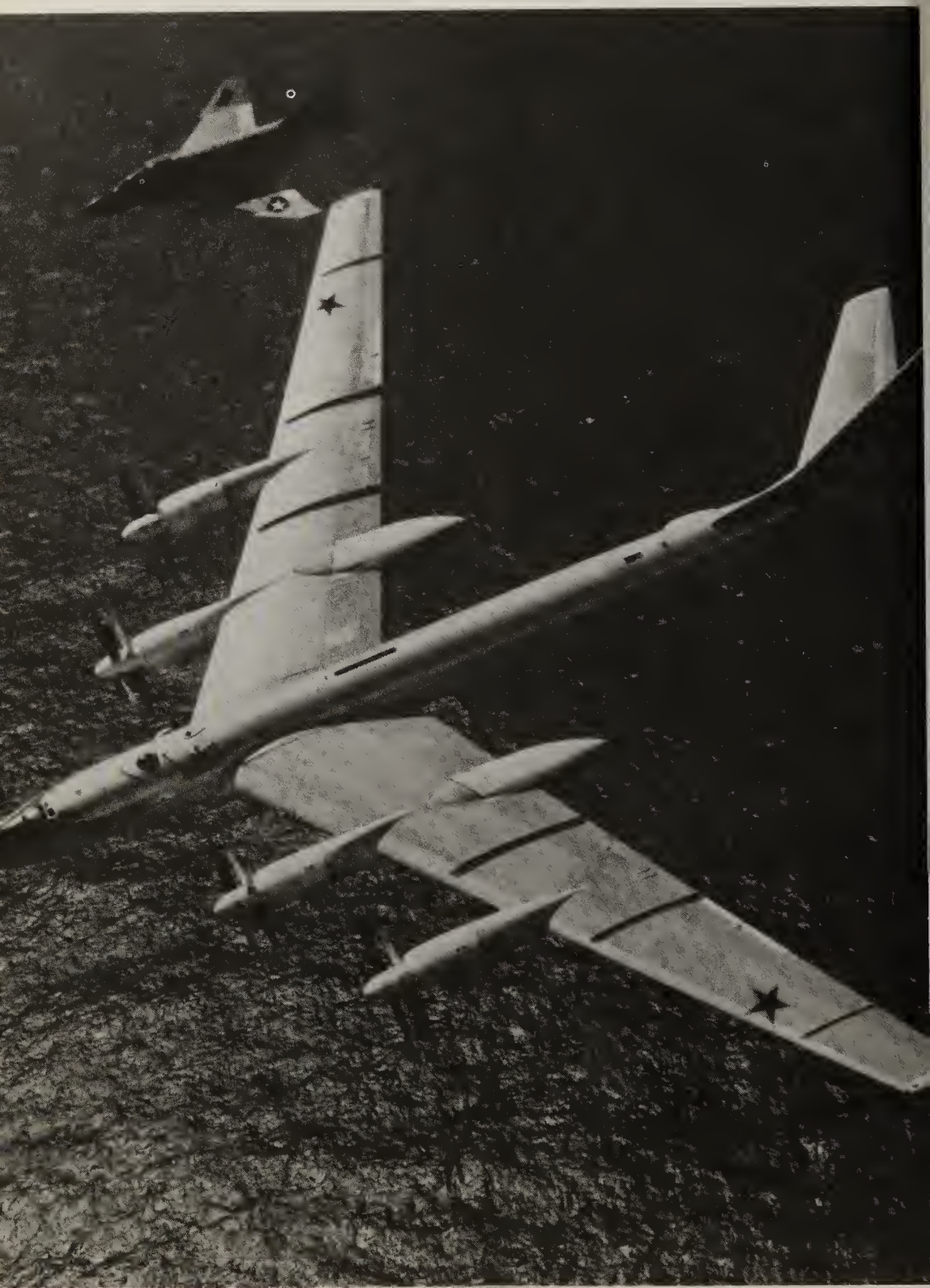
Twin 76-mm dual-purpose gun mounts, as in this KARA-class ship, are fitted in several cruiser, destroyer, and frigate classes.



Twin 30-mm rapid-fire guns, as shown here, and multi-barrel "Gatling" guns are fitted in Soviet ships for close-in defense.



The AIST class air cushion vehicle landing craft is used in Soviet amphibious operations. Fully loaded the AIST weighs over 200 tons, and can carry a tank or other vehicles, or cargo unloaded by a bow or stern ramp. Note the twin 30-mm gun mount forward and the fire control radar forward of the lattice mast. These craft have gas turbine propulsion and a speed of more than 50 knots.



Section 7. KEY QUESTIONS

1. What is the United States position regarding the Soviet Navy?

Answer by the Chief of Naval Operations: "The Soviet Navy represents a formidable challenge to our control of the seas. I estimated that, in a war at sea, which involved Soviet combatants in both the Atlantic and the Pacific, our prospects for successful sea control would be marginal. While our Navy decreased in size, there has been a substantial increase in the number and quality of Soviet capabilities. In order to correct this situation, we must reverse the decline in the number of active combatants. Our shipbuilding program is structured to do this. The resulting Navy should be more adequate than is now the case to maintain a world-wide capability, respond to sudden contingencies and defend the more critical SLOCs. For the U.S. Navy to remain second to none, logic drives us to the clear conclusion that we must allocate sufficient resources for shipbuilding to the Defense budget."

2. What is expected from the Soviet Navy and to what extent will their actions determine the future development of the United States Navy?

Answer by the Chief of Naval Operations: "We expect to see the Soviets expand the capabilities of their navy to deny our use of certain sea areas, to defend against our power projection forces and to act increasingly as an instrument of foreign policy. This past year the Soviets entered a new era in the development of their naval aviation with the introduction of the extended-range BACKFIRE bomber and the KIEV aircraft carrier. Evidence supports that they are working to improve their strategic

missile submarine systems and nuclear attack submarine forces, already the largest in the world. The Soviets are replacing older surface ships with new, more capable units; they are presently producing two classes of cruisers, a class of destroyer, new missile patrol boats, and mine warfare ships. Although they have little capability to launch large scale amphibious assaults over great distances, the Soviets are slowly but surely expanding their capabilities in this area, and are producing two classes of ocean-going assault ships. Finally, the Soviet Navy is expending much energy and resources in research and development, primarily in antisubmarine warfare, missile technology, and satellite systems. The United States Navy must ensure the protection of the sea lines of communication on which our country is so dependent. Furthermore, we must be able to project our power in support of our allies. To do so in the face of the Soviet threat, we must continue to modernize our fleet, maintain force levels, and improve the readiness of our existing ships. If we are unable to do so, the United States and its allies will become hostages to the growing strength of the Soviet Union."

3. Which Navy is larger?

The U.S. and Soviet navies are about equal in numbers of surface warships (destroyer escort and larger) while the Soviet Navy is significantly ahead in small combat craft and submarines.

Both navies are expected to decline slightly in ship numbers during the coming years as older ships are retired and the increasing cost (and size) of new ships tends to hold down the numbers built.

The basic approximate size of the two active fleets in early 1979 was:

A Soviet naval BEAR-D maritime surveillance aircraft approaches a U.S. aircraft carrier in the Pacific. Just off the BEAR's starboard wing is an F-4 PHANTOM fighter from the carrier. These mid-ocean overflights of U.S. ships by Soviet aircraft are apparently for intelligence collection and flight crew training. The BEAR first entered service with Soviet Long-Range Aviation in 1956.

Figure 11
U.S.—SOVIET FLEET STRENGTH
(January 1979)

	United States	Soviet Union
Surface Combatants (frigate and larger)	174	272
Small Combatants	3	570
Submarines (including nuclear submarines)	122 (114)	355 (155)
Amphibious ships	65	100
Minesweepers	3	430

In addition, 28 destroyers, 3 amphibious warfare ships, 22 minesweepers, and 6 auxiliary ships are assigned to the U.S. Naval Reserve Force (NRF) and are manned by mixed reserve-active duty crews.

4. Which Navy is stronger?

Simple numerical comparisons are no longer valid for making conclusions about the strengths of navies. In the nuclear-electronic-missile age the "equation" has become much too complicated. Also, the U.S. and Soviet navies have been built differently for different missions. In some areas one navy is stronger and the other navy is stronger in other areas.

The U.S. Navy is generally considered to have leadership in the areas of:

- Carrier Aviation
- Amphibious Assault
- Submarine Detection
- Submarine Noise Level Control
- Underway Replenishment
- Nuclear Surface Ships

The Soviet Navy is generally considered to be leading in:

- Anti-ship Missiles
- Submarines
- Small Combat Craft
- Tactical Coordination
- Ocean Surveillance
- New Technology Application
- Shipbuilding Initiative
- Military/Naval Education
- Minewarfare
- Integration of Maritime Resources
- Conventional Surface Ships

With respect to comparing the U.S. and Soviet navies, Admiral Gorshkov has observed that:

The qualitative transformations which have taken place in naval forces have also changed the approach to evaluating the relative might of navies and their combat groupings: we have had to cease comparing the number of warships of one type or another and their total displacement (or the number of guns in a salvo or the weight of this salvo), and turn to a more complex, but also more correct appraisal of the striking and defensive power of ships, based on a mathematical analysis of their capabilities and qualitative characteristics.

5. Should NATO navies be counted in U.S.—Soviet comparisons?

The addition of NATO naval forces to the U.S. fleets in the Atlantic and Mediterranean would have a most favorable impact on the ship comparisons. However, most NATO warships have national assignments that would take precedence over treaty commitments, many NATO ships are of limited capability (either because of age, type, or size), and experience since World War II has vividly demonstrated that the various NATO nations do not always support U.S. interests in either war or peace situations.

Geography also opts against large-scale NATO naval cooperation. For example, Norway with 15 submarines and 5 frigates may not be able to support NATO operations in the Mediterranean.

6. Why have the Soviets waited so long to build aircraft carriers?

Since the dramatic changes in Soviet government and policies of the mid-1950s the Soviet Navy has not always attempted to compete where the U.S. Navy is strongest. Rather, the Soviets have developed forces to counter the U.S. Navy, such as submarines and antiship missiles. It would not have been productive for the Soviet Navy to enter an area of naval warfare such as carrier aviation where the United States has several decades of experience and an existing force of super-carriers with their highly specialized aircraft.

Also significant is the fact that the prime mission of the U.S. Navy in time of war includes the projection of power overseas in support of allies and protection of broad ocean areas. The aircraft carrier is a key factor in both the "projection" and "sea control" missions. Soviet "projection" forces are primarily either political-economic in concept, or

ground military forces.

Construction of the newer KIEV-class carriers, however, now demonstrates an increasing interest in aircraft carrier-type ships. Along with the Soviet developments in amphibious capabilities, the KIEV and her sister carriers provide the Soviet Navy with improved projection and sea control capabilities.

7. How experienced is the Soviet Navy?

The Soviet Navy had minimal open ocean combat experience in World War II and none since that war. By comparison, some senior officers of the U.S. Navy saw extensive combat during World War II and the Navy as a whole had considerable combat experience during the Korean and Vietnam wars. Also, the U.S. Navy has had considerably more ocean-going experience during the three decades since World War II. But the Soviets are rapidly expanding their pool of trained seafarers in the Navy as well as the mer-

chant and fishing fleets.

8. Are aircraft carriers vulnerable to Soviet Missiles?

Soviet air, surface, and submarine-launched guided or cruise missiles are the primary military threat to U.S. aircraft carriers. Basically, all surface warships are vulnerable to these weapons. However, the aircraft carrier is the least vulnerable because of its extensive defensive and damage-control features. Of course, the aircraft carrier is essentially a mobile airbase, and is less vulnerable than a fixed base would be; also, it is not subject to certain threats such as political denial and guerilla attack.

The modern U.S. aircraft carrier is thus considered highly survivable in comparison with other general purpose forces and, at the same time, is recognized as one of the most powerful and versatile weapon systems ever developed.





Appendix A. EVALUATIONS BY THE SECRETARY OF DEFENSE AND THE CHIEF OF NAVAL OPERATIONS

The following evaluation of the Soviet Navy appears in the "Department of Defense, Annual Report, Fiscal Year 1980" by Secretary of Defense Harold Brown (25 January 1979):

STRATEGIC FORCES

The Soviet SLBM force has reached the limit of 950 modern launchers allowed under the Interim Offensive Agreement of 1972, and modernization of the force continues. Construction of the YANKEE-class submarine stopped at 34 boats (540 tubes). The SS-NX-17 solid-fuel missile with a post-boost vehicle, and greater accuracy than the SS-N-6, was backfitted into only one YANKEE submarine.

The Soviets now have a total of around 29 operational DELTA submarines. The DELTA 1s and 1Is continue to be armed with the SS-N-8, a single-warhead, liquid-fuel missile with a range of more than 8,000 kilometers. The Soviets have begun to deploy the SS-N-18, a liquid-fuel missile installed in the DELTA 111. This missile has a range of about 7,500 kilometers, and a post boost vehicle capable of dispensing three MIRVs. With the SS-N-8, the Soviets already have a missile with a greater range than our TRIDENT 1. Both the SS-N-8 and the SS-N-18 permit the Soviets to cover targets in the United States from patrol areas in the Barents Sea and the western Pacific.

We believe that, with the advent of the newer, longer range missiles and the elimination of long transits to patrol areas, the percentage of on-station submarines will rise significantly in the near future.

NAVAL FORCES

The overall size of the Soviet general purpose naval forces has not changed significantly since last year. The ocean-going surface combatant force con-

sists of: two KIEV-class light, VTOL, guided missile carriers — one in operation, one undergoing sea trials, and a third under construction; two MOSKVA-class aviation cruisers; and 266 other surface combatants, including 20 with anti-ship missile launchers. What could be a nuclear powered cruiser displacing over 20,000 tons is being fitted out in the Baltic. Construction continues on KRIVAK-II and GRISHA class surface combatants.

The general purpose submarine force (excluding SSBs and SSBNs) consists of 195 attack submarines and 65 cruise missile submarines the majority of which are nuclear powered. Submarine production emphasizes evolutionary improvements rather than revolutionary change.

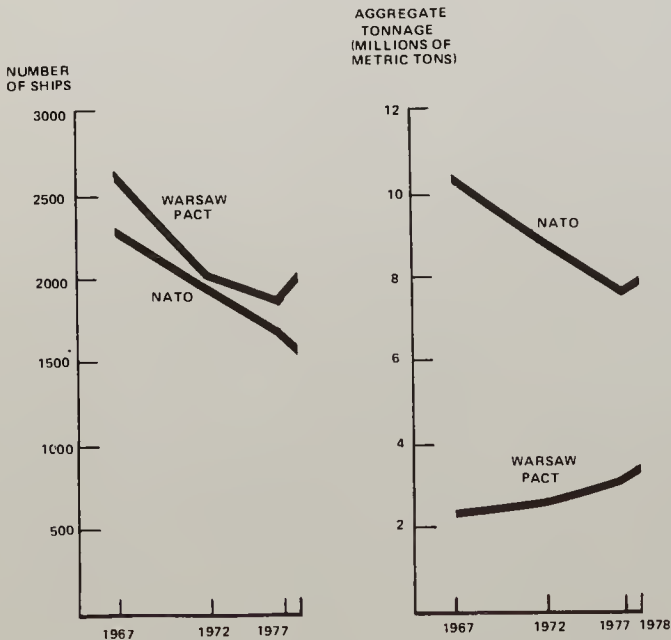
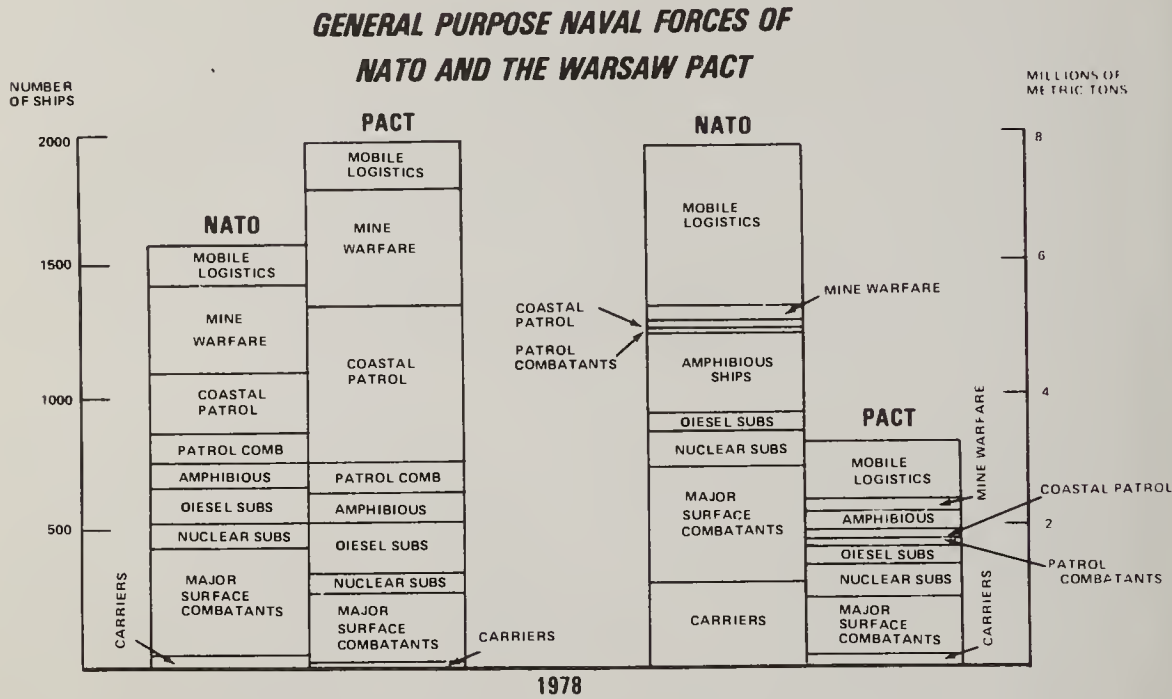
The Soviets now have 101 amphibious ships, of which 25 are capable of extended operations and open-ocean transit. A new amphibious ship of about 13,000 tons, the IVAN ROGOV Amphibious Assault Transport Dock (LPD), has now completed sea trials. It will probably accommodate an infantry battalion as well as air cushion landing craft in its well. New construction of amphibious ships, however, continues at a modest level. In addition, the Soviet merchant marine has the capability to support overseas operations, especially with roll-on/roll-off ships, of which at least 25 are now in service. Estimated Soviet naval infantry consists of about 12,000 men.

Direct support to the fleet comes from 85 replenishment ships. There are 215 other major auxiliaries in support of the fleet.

This closeup of the helicopter carrier MOSKVA shows the ship's large array of search and fire control radars, and other electronic equipment. Modern Soviet ships are heavily laden with electronic systems. However, their design and use differs from their U.S. Navy counterparts, making direct comparisons difficult. Several KA-25 HORMONE ASW helicopters are on her flight deck.

Trends in the number and tonnages of the NATO and Warsaw Pact navies (with ballistic missile submarines and their supporting vessels excluded) are shown below.

Chart 6-2



- NOTES
- 1 MOBILE LOGISTICS SHIPS INCLUDE ONLY THOSE AUXILIARIES WHICH PROVIDE UNDERWAY REPLENISHMENT OR DIRECT MATERIAL SUPPORT TO UNITS OPERATING AWAY FROM HOME BASE. A NUMBER OF OTHER AUXILIARY TYPES ARE NOT INCLUDED IN THESE TOTALS.
 - 2 DISPLACEMENTS SHOWN ARE FULL LOAD FOR SURFACE SHIPS AND SUBMERGED FOR SUBMARINES.

Chart 6-3

The Soviets assign around 350 of their medium bombers to Naval Aviation, including BACKFIRES. These aircraft will be able to attack ships with air-to-surface missiles at extended distances from their home bases. Shown below are the operating radii of the BACKFIRE in an anti-shipping flight profile. In addition, there are 60 fighter-bombers assigned to Soviet Naval Aviation.



The Northern and Pacific Fleets continue to include in their missions defense against U.S. aircraft carriers and interdiction of the major shipping lanes. However, we still estimate that the Soviets give the highest naval priority to ASW against ballistic missile submarines and that the KIEV class guided missile VTOL aircraft carrier was designed primarily for this purpose. The KIEV is assigned to the Northern Fleet.

The KIEV class carriers, with their vertical take-off and landing (VTOL) aircraft, HORMONE helicopters, long-range anti-ship missiles, and ASW weapons, could engage in general sea control as well as power projection missions. They can already provide a limited amount of protection to Soviet sealift in distant operations, and they could afford a modest amount of air cover for amphibious assaults. Whether this capability will be substantially expanded in the future is still uncertain.

COUNTERING THE SUBMARINE THREAT

While Soviet submarines may become quieter and more difficult to detect, our Navy has maintained and in some cases even widened our technological lead.

However, it is important to keep these trends in perspective. The Soviet Submarine Fleet is large and

is growing more modern while decreasing in numbers. Most of the decrease is related to a forecast retirement of older diesel submarines with coastal defense capability. The growth in nuclear submarine assets as well as projected retention of highly capable diesel attack submarines in their inventory result in a net increase in Soviet capability.

The Soviets have a large and increasingly modern force and they are developing new weapons and sensors to make their submarines more effective. All Soviet submarines carry torpedoes; some carry anti-ship cruise missiles. They have twenty years of experience with submarine-launched cruise missiles, while SSN-launched HARPOONS are just now entering our fleet. This large, effective, and well equipped submarine force represents a potentially serious threat to U.S. naval power.

THE SITUATION AT SEA

Even the threat of these contingencies, as well as their actual occurrence, means that we must be in a position at all times to protect the major sea lanes to our allies. If non-nuclear deterrence is to be credible, our opponents must understand not only that we can deploy our forces rapidly to endangered areas, but also that we can sustain those forces in combat as long as necessary. In the event that deterrence should fail, a non-nuclear conflict of any

duration would necessitate moving up to 95 percent of our military and economic cargoes by sea. In short, powerful naval forces remain essential to our security. That is not in doubt. Whether the U.S. Navy, in conjunction with allied navies, is powerful enough to execute its essential non-nuclear missions remains a matter of controversy. In my judgment it is.

Suppose that a conflict involving U.S. forces developed in the Middle East, that it spread to Europe, and that there was the further possibility that it might somehow leap to the Far East. At a minimum, in these circumstances, we would need to protect our sea lines of communication (SLOCs) in the Mediterranean, the North Atlantic, and the Western Pacific. Our allies should be able to bottle up Soviet naval forces in the Baltic and Black Seas. The main U.S. concern, therefore, would be primarily with the Soviet Northern and Pacific Fleets, and the Soviet Mediterranean Squadron, although several of our allies could also make vital contributions to the defeat of these forces.

The outcome of a shootout between our Sixth Fleet and the Soviet Squadron in the Mediterranean would depend to some degree on who fired first, and on tactical considerations, such as the degree of freedom for U.S. forces to choose their location and movement during a crisis. There is little doubt, however, that as long as we and our friends control the Mediterranean littoral, we could destroy the Soviet Squadron and come to dominate these waters.

There are several ways in which we could combat the Soviet Northern and Pacific Fleets, and they have differing effects both on U.S. naval force requirements and on how we assess the outcome of a hypothetical war at sea. Because of geography, the most efficient strategy would be to force the Soviet fleets to fight in waters favorable to us, although this would not preclude us from operating selectively in the Norwegian Sea, the Barents Sea, and the Sea of Japan.

To succeed in the interdiction of our main SLOCs, the Soviets would have to emerge from Murmansk, Vladivostok, and Petropavlovsk, run a gauntlet of air, surface, and subsurface barriers in narrow seas, in the open oceans, and around our capital ships and convoys, and inflict heavy damage on our economic and military cargoes over a period of months. As far as we can tell, their surface combatants (if they even emerged) could not survive in this environment long enough to inflict damage of any significance. Our main problem would come from Soviet land-based naval aviation — principally

the BACKFIRES armed with air-to-surface missiles — and from Soviet cruise missile firing and torpedo firing submarines. Some of these forces might predeploy in order to escape our defensive barriers, but unless overseas bases were available to them, they would soon have to run the gauntlet to return to their home bases for resupply and refitting. Furthermore, our forces could quickly reduce any overseas bases they might have at the outset of the campaign.

Our aircraft carriers deployed in the North Atlantic and Western Pacific should be able, in conjunction with aircraft based in the United Kingdom, Iceland, and Japan, to keep the BACKFIRE threat to manageable proportions over the next few years. Because individual kill probabilities tend to be low in anti-submarine warfare (ASW), it could take as many as three months to bring the Soviet submarine threat under control in the Atlantic and the Pacific. Typical — though necessarily uncertain — estimates show that, during those months, essential cargoes would get through to Europe and Japan although we might lose a significant percentage of U.S. and allied merchant shipping. At the same time, according to these estimates, the Soviets would lose a large percentage of their submarine force, and their subsequent effectiveness against the main SLOCs would be low.

These estimates give us no grounds for complacency about the future. Soviet submarines will undoubtedly become quieter and more difficult to detect. Modern Soviet land-based naval aviation will probably expand in size and grow more capable as techniques for ocean surveillance improve and are linked with these aircraft. Because we invested so many resources in so few surface combatants during the late 1960s and early 1970s, and because so many of our destroyers will suffer block obsolescence toward the end of the 1980s, we run the risk then of having less two-ocean, surface-based ASW and AAW ships than would be desirable. We are also shorter of modern mines and mine countermeasure capabilities than is prudent. Now that we are rapidly improving our anti-ship cruise missile capability, destroyer and frigate force levels and mine inventory deficiencies remain two of our most serious naval weaknesses. Perhaps of equal importance, we lack adequate defense effectiveness against massed bomber and missile attacks.

CONCLUSION

I realize that, in making these assessments, I have run counter to many widespread views about our military position relative to the Soviet Union. How-

ever, I believe that my judgments are an accurate reflection of present realities. And while I must necessarily take responsibility for the specifics of my appraisal, I think it is fair to say that my overall outlook about the present situation coincides with the view of my principal military adviser. In the

words of the Chairman of the Joint Chiefs of Staff: "There is too much pessimism about our current capability. I wouldn't swap our present military capability with that of the Soviet Union, nor would I want to trade the broader problems each country faces."

The following excerpts are from the statement of the Chief of Naval Operations, Admiral Thomas B. Hayward, on the "Fiscal Year 1980 Military Posture and Fiscal Year 1980 Budget" presented to the Congress (2 February 1979):

TRENDS IN THE SOVIET THREAT

In the past 15 years, the Soviet Navy has steadily grown from a coastal defense force into a blue water navy powerful enough to challenge the U.S. Navy in most major ocean areas of the world. It has continually evolved toward broader missions, a growing ability to exercise effective command and control on a worldwide basis, and a capacity to shift forces from one ocean area to another rapidly and to operate them effectively. These impressive developments, when contrasted with the considerable reductions in the size of the U.S. Navy, represent a disturbing trend.

As the USSR became a superpower and developed a powerful navy, the mission and tasks of their Navy broadened well beyond its original scope, to include: strategic nuclear strike and deterrence; destruction of enemy naval forces; SLOC interdiction; support of ground forces; support of state policy and interests; and projection of naval forces ashore.

Geopolitical considerations have led to basic differences between the strategies of the U.S. and Soviet navies. The United States will continue to be dependent upon the free use of the seas to transport its raw materials, engage in commerce, and provide wartime support for its allies, while the Soviet Union will continue to plan to deny the United States that use.

COMPARISON OF FORCE LEVELS

The asymmetries in national heritage, geography, and missions discussed above have led to naval force structures that are markedly different. Trends in the U.S. and USSR naval force levels emphasize a marked decline in the size of the U.S. Navy since 1969. By comparison, Soviet reductions have been modest and primarily involve the smaller coastal defense ships.

Another major asymmetry is the existence of the large, land-based Soviet Naval Aviation (SNA)

bomber force which is a significant threat today. More important, as older aircraft are retired, they are being replaced by new, longer range, supersonic BACKFIRE bombers. If the addition of BACKFIRE bombers to SNA continues, there is every reason to believe that a very significant proportion of the force will be composed of such bombers by the mid-1980s and, thus, the overall capabilities of that force will be markedly greater.

COMPARISON OF NAVAL WARFARE CAPABILITIES

This discussion compares the U.S. and Soviet navies by examining the ability of each navy to perform fundamental tasks in the face of opposition by the other.

Anti-Air Warfare (AAW). The threat posed by Soviet aircraft and anti-ship cruise missiles (ASCMs) is growing steadily due to continuing introduction of improved delivery platforms; weapon systems; electronic countermeasures equipment; surveillance, tracking, and targeting systems; and command and control equipment and procedures.

This threat is especially imposing in those ocean areas in which the Soviet Navy can conduct large-scale saturation attacks with air, surface, and submarine launched missiles. These attacks can overwhelm existing U.S. fleet AAW systems that are already vulnerable to high-density raids. Significant upgrading of our AAW capability is a pressing requirement for offsetting the increasing Soviet air threat.

Anti-Submarine Warfare (ASW). Current assessments indicate that U.S. ASW forces are continuing to improve in their ability to counter the Soviet threat to our forces at sea. This is largely due to a combination of the comparatively high radiated noise level of Soviet nuclear submarines and advanced U.S. acoustic technology that takes full advantage of radiated noise. The U.S. Navy has pur-

sued acoustic technology as the primary means for detection, surveillance, tracking, and localization of submarines. While this emphasis on passive acoustics is expected to pay off in the short run, complementary detection methods must be pursued. The much larger size and improving sophistication of the Soviet submarine force is cause for concern.

Anti-Surface Ship Warfare (ASUW). The U.S. Navy's ASUW forces have historically enjoyed an advantage over their Soviet opponents. This is largely due to the destructive power of U.S. carrier-based attack aircraft. However, over recent years, the U.S. Navy's advantage in this warfare area has been eroding because of decreasing numbers of U.S. carriers; increasing numbers of sophisticated, ocean-going Soviet surface combatants and nuclear attack submarines; and improving Soviet AAW systems.

In order to maintain its advantage, the U.S. Navy must develop: improved anti-ship cruise missiles; over-the-horizon targeting; improved all weather sensors and stand-off weapons for attack aircraft and guided projectiles.

Strike Warfare. The U.S. Navy's strike warfare power resides in its carrier-based tactical aircraft. To sustain this essential capability, carrier forces must not drop below current levels. Additionally, sufficient modern strike aircraft to provide twelve fully-equipped airwings must be maintained. For the future, deployment of both nuclear and conventional versions of the TOMAHAWK cruise missile on surface combatants, attack submarines, and aircraft is important to enhancing U.S. ability to conduct nuclear or conventional strikes against targets at long ranges and with great accuracy. The Soviet Navy has a very limited sea-based, general purpose capability for conducting land attack.

Amphibious Warfare. Amphibious forces provide a flexible and mobile arm of power projection for the United States, and such operations contribute significantly to defense of vital sea areas. This is particularly important in the support of operations on NATO's flanks and islands. U.S. amphibious forces are relatively modern, but they will face block obsolescence in the 1985-2000 period.

The Soviet Navy has a modest amphibious lift capability; however, it is growing in both size and sophistication. This Soviet capability is considered adequate for a number of Third World situations, and for assault operations in areas under cover of Soviet or Soviet allied land-based tactical air.

Mine Warfare. The U.S. Navy's mine warfare operations are integral to both its offensive and

defensive functions. Soviet mine stockpiles have always been extremely large and, although many of them are old and incorporate World War II technology, new developments are greatly increasing the magnitude of the threat. The U.S. Navy employs helicopters against shallow mines and mine countermeasures surface ships against deep mines. Currently, there are inadequate numbers of both helicopters and ships.

On the offensive side, U.S. forces must be able to establish minefields at geographic choke points and near Soviet naval bases. The mining of Haiphong demonstrated the importance of this type of warfare in a conflict. Three mine warfare programs support this requirement: the CAPTOR ASW mine for deep water; an intermediate water depth (IWD) mine; and QUICKSTRIKE for development of air and submarine-delivered shallow water mines.

Strategic Warfare. The Soviet Navy has 62 modern, nuclear-powered ballistic missile submarines (SSBNs) that are included under the SALT I limit, and additional DELTA-III class SSBNs are currently under construction. Soviet intentions to continue to modernize their SSBN force are evidenced by the ongoing construction of these larger SSBNs and development of new missile systems.

The Soviet Navy also currently has several SLBM systems available. The most recent SLBM deployed is the SS-N-18 which has a range in excess of 4,000 nautical miles. The longest range SLBM in their arsenal is the 4,200 nm SS-N-8 deployed aboard the DELTA I and II class submarines. The SS-N-18 is the first identified Soviet naval MIRV system. Ranges of both the SS-N-8 and the SS-N-18 allow the Soviet DELTA-class submarines to attack continental U.S. targets from Soviet home waters such as the Barents Sea. Finally, a number of other less capable ballistic missile diesel submarines presently operate in seas bordering the USSR such as the Baltic and the Sea of Japan. Although the missiles carried by these submarines have a significantly shorter range, they still pose a theater nuclear threat.

While the current U.S. strategic force of POSEIDON and POLARIS SSBNs is highly survivable and represents an adequate sea-based deterrent and assured second strike force now, the U.S. Navy has several ongoing strategic programs which look toward future requirements, including the TRIDENT SSBN and the TRIDENT I and TRIDENT II SLBMs. In view of the coming block obsolescence of the POSEIDON SSBNs and the national need for survivable, enduring, and flexible sea-based strategic systems, continuation of these on-going programs is imperative.

The preceding warfare comparisons do not cover all aspects of naval warfare, but they do provide an overview of the more unsettling trends in the U.S.-Soviet naval balance.

RISK ASSESSMENT

The foregoing trends are aggregated annually in the Navy Net Assessment, a unique analytic element of the Navy program planning process, to provide a summary assessment of the two navies' relative capabilities. This annual estimate of the naval balance derives from studies which analyze entire naval campaigns wherein each Navy's objectives, strategy, and tactics, order of battle, and other relevant factors are carefully weighed. To these study results are

added the soundest professional judgments available regarding those factors that determine the naval balance.

It is this process that leads to the conclusion that today the Navy is marginally capable of carrying out its mission and tasks within the national strategy. In the event of a NATO-Warsaw Pact war, our current force structure is not sufficient to provide adequate capability in all areas simultaneously. Furthermore, programmed general purpose forces are not adequately sized, structured, or supported to provide a reasonable assurance of continued success in carrying out the Navy's overall mission. The Soviet Navy continues to increase in strength and now confronts the U.S. Navy with a highly capable fleet.



MAY anti-submarine aircraft

Appendix B. SOVIET NAVY ORDER OF BATTLE

(January 1979)

ACTIVE SHIPS

Submarines — Nuclear Propelled (155)

SSBN	Ballistic Missile Submarines (YANKEE, DELTA classes) . . .	63
SSBN	Ballistic Missile Submarines (HOTEL class)	8
SSGN	Cruise Missile Submarines . . .	40
SSN	Torpedo-Attack Submarines . .	44

Submarines — Diesel-electric Propelled (200)

SSB	Ballistic Missile Submarines . . .	20
SSG	Cruise Missile Submarines . . .	25
SS	Torpedo-Attack Submarines . .	155

Anti-Submarine Aircraft Carriers (4)

CVHG	VSTOL Aircraft Carriers (KIEV class)	2
CHG	Helicopter Carriers (MOSKVA class)	2

Cruisers (35)

CG	Guided Missile Cruisers (SAM/SSM*)	25
CLC	Command Cruisers (SVERDLOV class)	2
CL	Light Cruisers (SVERDLOV, CHAPAYEV classes)	8

Destroyers (71)

DDG	Guided Missile Destroyers (SAM/SSM*)	36
DD	Destroyers	35

Frigates (162)

FFG	Guided Missile Frigates (KRIVAK class)	22
FF/FFL	Frigates	140**

Small Combatants

Missile Craft	145
Patrol/ASW/Torpedo Craft . .	425
Minesweepers (Fleet)	195
Minesweepers (Coastal, Inshore)	235

Amphibious Ships

LSD	Dock Landing Ships (IVAN ROGOV class)	1
LST	Tank Landing Ships (ALLIGA- TOR, ROPUCHA classes) . . .	25
LSM	Medium Landing Ships (POLNOCNY, MP-4 classes) .	75

Auxiliary Ships

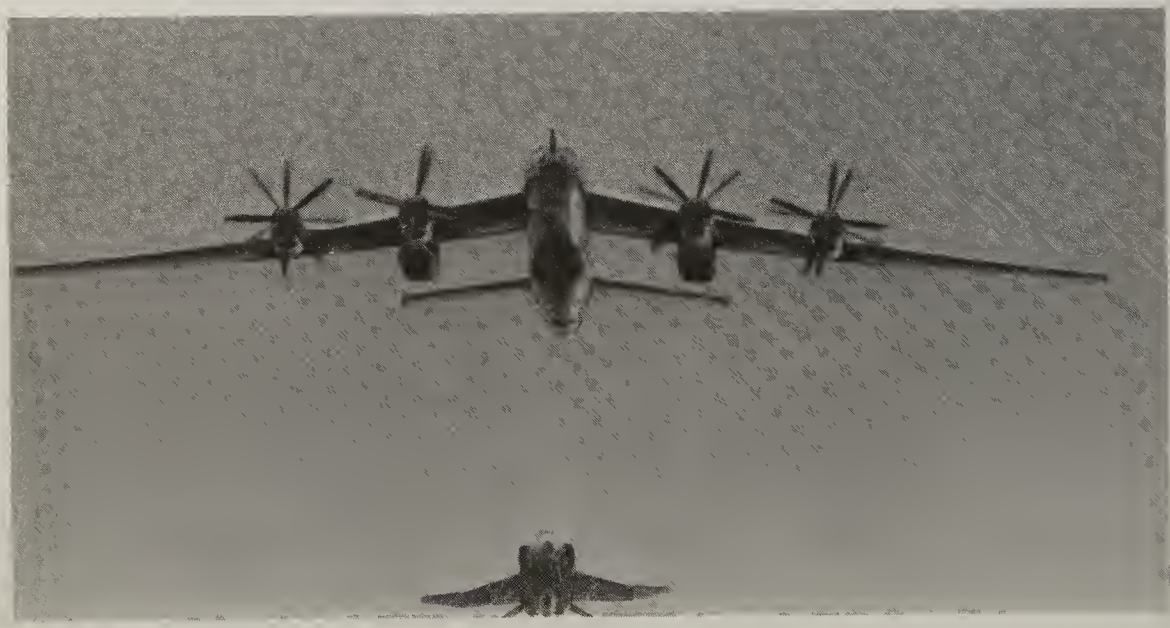
Underway Replenishment Ships	85
Support Ships	65
Tug-type Ships	150
Intelligence Collection Ships . .	50
Other Auxiliaries	40

*All armed with Surface-to-Air Missiles (SAM); some additionally armed with Surface-to-Surface Missiles (SSM).

**Includes GRISHA-class patrol escorts now considered light frigates.

ACTIVE AIRCRAFT

Strike/Bomber Aircraft (BACKFIRE, BADGER, BLINDER)	350	Tanker Aircraft (BADGER)	80
Fighter/Fighter-Bomber Aircraft (FORGER, FITTER)	60	Anti-Submarine Aircraft (BEAR-F, MAY, MAIL, HORMONE-A, HAZE-A)	370
Reconnaissance/Electronic Warfare Aircraft (BEAR-D, BADGER, BLINDER)	160	Transport/Training Aircraft	290
		Total Aircraft	1,310



BEAR-D maritime surveillance/reconnaissance aircraft

Appendix C. SOVIET WARSHIP DESCRIPTIONS

Our Navy is a focal point for the most recent achievements of science and technology. Nuclear missiles, powerful propulsion plants, and radar and electronic equipment have given it new qualities and advanced the Navy into the rank of forces of strategic significance.

Fleet Admiral N. I. SMIRNOV

This appendix provides basic descriptive data and photographs of the more significant Soviet submarines and surface ships. For more detailed and comprehensive data see the classified publication *Ship Characteristics: USSR (U)* (ST-HB-08-41-A72).

Arrangement: In this appendix ship classes are arranged alphabetically under their type category.

Classification: The dimensions, characteristics, and general information in this appendix are approximate

and unclassified. All photography in this appendix is unclassified and may be ordered for public distribution through appropriate channels from the Navy.

Designations: Simplified ship designations have been used in this appendix; they are not necessarily the formal designations assigned by U.S./NATO navies. All ships names are NATO code names except those indicated by asterisks, which are transliterations of the actual Soviet names.

SUBMARINES



ALFA attack submarine

Nuclear-Propelled Attack Submarines (SSN): ALFA Class

Displacement:	approx. 3,900 tons surfaced; 4,250 tons submerged
Length:	approx. 80 meters (265 feet)
Propulsion:	nuclear, approx. 40 knots submerged
Main armament:	torpedo tubes

The prototype ALFA was completed at the Sudomekh submarine yard in Leningrad in the early 1970s. After several years of test and evaluation, series production is apparently underway. The Director of Naval Intelligence stated in 1979 that "while its characteristics are still not fully known, it is expected to be capable of increased operating depths as well as upgraded weapons systems." Reportedly, the ALFA is constructed of advanced metals with an improved reactor plant and a high degree of automation. The ALFA is smaller than the previous VICTOR-class SSN designs.



CHARLIE I cruise missile submarine

Nuclear-Propelled Cruise Missile Submarines (SSGN): CHARLIE I Class

Displacement:	4,000 tons surfaced
Length:	95 meters (311 feet)
Propulsion:	nuclear
Main Armament:	8 SS-N-7 anti-ship missiles torpedo tubes

The first unit of this class became operational in 1968. The CHARLIE I anti-ship cruise missiles have a range of more than 55 kilometers (30 nautical miles). Eleven CHARLIE I SSGNs were built before being succeeded by the improved CHARLIE II program. These later CHARLIE-class submarines are slightly larger.



CHARLIE I cruise missile submarine



DELTA I ballistic missile submarine

Nuclear-Propelled Ballistic Missile Submarines (SSBN): DELTA I Class

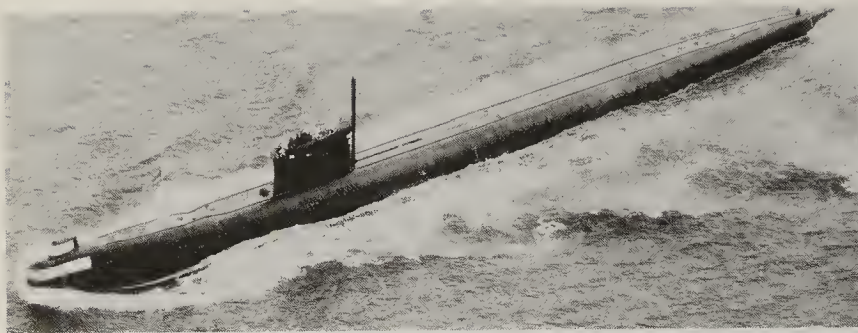
Displacement:	8,000 tons surfaced
Length:	140 meters (460 feet)
Propulsion:	nuclear
Main Armament:	12 SS-N-8 strategic SLBMs torpedo tubes

The DELTA-class SSBNs are follow-on submarines to the YANKEE class. The first DELTA 1 went to sea in 1971. This SSBN carries 12 SS-N-8 SLBMs with a range of more than 7,500 kilometers (4,000 nautical miles).

Nuclear-Propelled Ballistic Missile Submarines (SSBN): DELTA II/III Classes

Displacement:	9,000 tons surfaced
Length:	155 meters (508 feet)
Propulsion:	nuclear
Main Armament:	16 SS-N-8 or SS-NK-18 strategic SLBMs torpedo tubes

The DELTA II-class, a lengthened version of the DELTA I, was first deployed in the Soviet Northern Fleet in early 1976. Other than its greater length and larger missile battery, the DELTA II is similar to the DELTA I SSBN. An improved variant of the DELTA in production is armed with the SS-NX-18 SLBM, which probably carries a Multiple Independently Targetable Re-entry Vehicle (MIRV) warhead and has a range of more than 7,500 kilometers (4,000 nautical miles).



ECHO attack submarine

Nuclear-Propelled Attack Submarines (SSN): ECHO Class

Displacement:	4,500 tons surfaced
Length:	110 meters (360 feet)
Propulsion:	nuclear
Main Armament:	torpedo tubes

Five ECHO I-class cruise missile submarines (SSGN) were built from 1960 to 1962. These submarines were originally armed with six tubes for the SS-N-3 SHADDOCK anti-ship cruise missile plus torpedo tubes. All five units have now been converted to an attack configuration (SSN) by removal of the missile tubes. Torpedoes now comprise their weapons capability. As SSNs this class is known simply as ECHO without the suffix "I."



ECHO II cruise missile submarine

Nuclear-Propelled Cruise Missile Submarines (SSGN): ECHO II Class

Displacement:	5,000 tons surfaced
Length:	115 meters (377 feet)
Propulsion:	nuclear
Main Armament:	8 SS-N-3/12 anti-ship missiles torpedo tubes

Twenty-nine ECHO II-class SSGNs were completed between 1962 and 1967. All are in active Soviet service. These submarines are armed with eight SS-N-3 or possibly SS-N-12 cruise missiles plus torpedo tubes. These submarines must surface to fire their missiles. The maximum effective range of the SS-N-3 missile in the anti-ship role is about 375 kilometers (250 nautical miles); however, the missile is capable of significantly longer aerodynamic flight.



FOXTROT attack submarines

Attack Submarines (SS): FOXTROT Class

Displacement:	2,000 tons surfaced
Length:	90 meters (295 feet)
Propulsion:	diesel-electric
Main Armament:	torpedo tubes

The FOXTROT is a popular fleet-type submarine introduced in the late 1950s and still widely used. Eight have been provided to India, one to Libya, and one to Cuba. About 60 remain active in the Soviet Navy. Construction continues for foreign transfers.



GOLF ballistic missile submarine

Ballistic Missile Submarines (SSB): GOLF I/II Classes

Displacement:	2,300 tons surfaced
Length:	100 meters (328 feet)
Propulsion:	diesel-electric
Main Armament:	3 SS-N-4 or 3 SS-N-5 SLBMs torpedo tubes

Twenty-three GOLF diesel ballistic missile submarines (SSB) were built from 1958 to 1962, with one submarine accidentally sinking in the mid-Pacific in 1967. The submarines were built to carry three SS-N-4 SARK Submarine Launched Ballistic Missiles (SLBM). These SLBMs are launched while the submarine is surfaced and have an estimated range of over 600 kilometers (325 nautical miles). Many of these submarines were modified to the GOLF II configuration carrying the SS-N-5 SERB SLBM with estimated range of 1,300 kilometers (700 nautical miles) and can launch their missiles while submerged. About 20 units are still in active service.

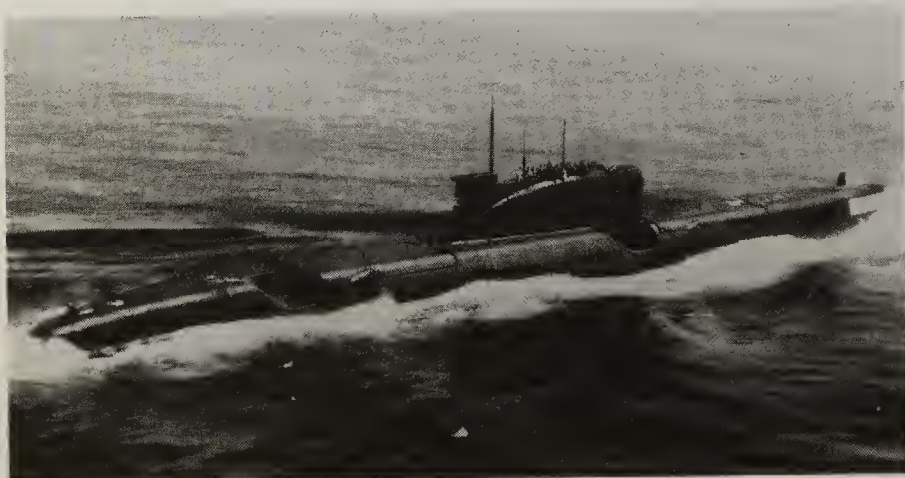


HOTEL ballistic missile submarine

Nuclear-Propelled Ballistic Missile Submarines (SSBN): HOTEL II/III Classes

Displacement:	5,000 tons surfaced
Length:	115 meters (377 feet)
Propulsion:	nuclear
Main Armament:	3 SS-N-5 SLBMs torpedo tubes

Eight of the HOTEL SSBN class were completed from 1958 to 1962. Initially the submarines carried three SS-N-4 missiles. Their conversion to the HOTEL II configuration replaced the SS-N-4 with the submerged-launched SS-N-5. One HOTEL has been modified to a missile test submarine for a later SLBM (now designated HOTEL III).



JULIETT cruise missile submarine

Cruise Missile Submarines (SSG): JULIETT Class

Displacement:	3,000 tons surfaced
Length:	90 meters (295 feet)
Propulsion:	diesel-electric
Main Armament:	4 SS-N-3 anti-ship missiles torpedo tubes

Sixteen JULIETT submarines were built during the early 1960s. The JULIETT is fitted with four tubes for the SS-N-3 anti-ship cruise missile which is a surface-launched weapon. All 16 submarines are believed to be in active service.



NOVEMBER attack submarine

Nuclear-Propelled Attack Submarines (SSN): NOVEMBER Class

Displacement:	4,500 tons surfaced
Length:	110 meters (360 feet)
Propulsion:	nuclear
Main Armament:	torpedo tubes

The NOVEMBER SSN, the first Soviet nuclear-propelled submarine, became operational in 1959. Fourteen units were completed by 1965. One NOVEMBER sank in the eastern Atlantic in April of 1970 (the crew was removed before sinking). The NOVEMBER-class submarines are armed with torpedoes and, as most attack submarines, can also carry mines.



ROMEO attack submarine

Attack Submarines (SS): ROMEO Class

Displacement:	1,500 tons surfaced
Length:	80 meters (262 feet)
Propulsion:	diesel-electric
Main Armament:	torpedo tubes

About 20 ROMEO-class submarines were completed between 1958 and 1961. Six of these submarines have been transferred to Egypt, two to Bulgaria, and a number have been built in China (PRC) and North Korea. The ROMEO-class submarines have eight torpedo tubes and can launch mines as well as torpedoes.



TANGO attack submarine

Attack Submarines (SS): TANGO Class

Displacement:	3,000 tons surfaced
Length:	90 meters (295 feet)
Propulsion:	diesel-electric
Main Armament:	torpedo tubes

The TANGO is a new class of diesel-electric propelled, torpedo-attack submarine, apparently being produced as a successor to the FOXTROT and earlier torpedo-attack submarines. The first TANGO became operational in 1973 with several additional units having been constructed, demonstrating the Soviet Navy's continued interest in advanced conventional submarines.



VICTOR I attack submarine

Nuclear-Propelled Attack Submarines (SSN): VICTOR Class

Displacement:	4,000 tons surfaced
Length:	95 meters (311 feet)
Propulsion:	nuclear, over 30 knots submerged
Main Armament:	torpedo tubes

The first VICTOR-class SSN was completed in 1967. This high-speed attack submarine was developed as a follow-on to the NOVEMBER class, representing significant Soviet qualitative improvement in nuclear submarine design. The armament of the VICTOR consists of torpedoes and possibly anti-submarine missiles. This submarine class is one of the fastest in the world. Construction of an improved and slightly larger VICTOR variant is continuing.



WHISKEY attack submarine

Attack Submarines (SS): WHISKEY Class

Displacement:	1,035 tons surfaced
Length:	75 meters (246 feet)
Propulsion:	diesel-electric
Main Armament:	torpedo tubes

The design of the WHISKEY-class SS was based extensively on German World War II design concepts. Two hundred thirty-six submarines of this class were built during the 1950s in what was the largest submarine construction program of the post-World War II period. A number of units remain in Soviet active and reserve service, with some 40 to 50 submarines serving in the navies of Albania, Bulgaria, China (PRC), Egypt, Indonesia, North Korea, and Poland. WHISKEY submarines are armed with six torpedo tubes; the various deck guns mounted in early variants have been removed from the surviving units. Several units were modified to cruise missile (SSG) and radar picket (SSR) configurations. Modifications include CANVAS BAG radar picket submarine, and the TWIN CYLINDER and LONG BIN cruise missile variations carrying the SS-N-3 anti-ship missile. In addition, two of these submarines were modified to oceanographic/fisheries research roles.

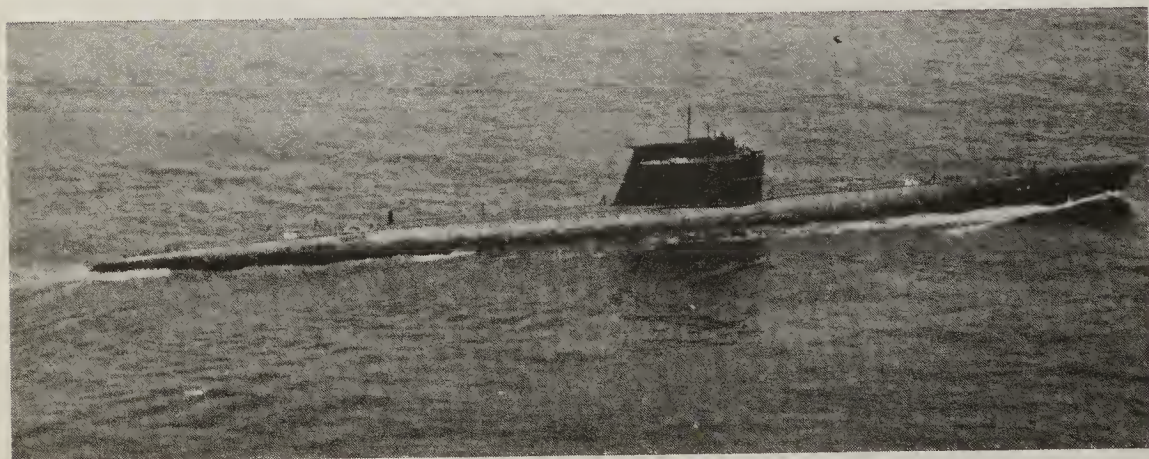


YANKEE ballistic missile submarine

Nuclear-Propelled Ballistic Missile Submarines (SSBN): YANKEE Class

Displacement:	8,000 tons surfaced
Length:	130 meters (426 feet)
Propulsion:	nuclear
Main Armament:	16 SS-N-6 Strategic SLBMs torpedo tubes

The YANKEE class, which became operational in 1968, was the first modern design SSBN in the Soviet Navy. A total of 34 submarines of this class was built. The YANKEE has 16 missile tubes for the SS-N-6 ballistic missile. There are three variants of the missile with ranges up to 2950 kilometers (1600 nautical miles). The SS-NX-17 is a longer-range, more-capable missile which may be fitted in this class.



ZULU attack submarine

Attack Submarines (SS): ZULU Class

Displacement:	1,950 tons surfaced
Length:	90 meters (295 feet)
Propulsion:	diesel-electric
Main Armament:	torpedo tubes

About 26 ZULU-class submarines were produced from 1952 to 1955. The ZULU is a long-range version of the WHISKEY SS fitted with more torpedo tubes. Most ZULU-class submarines have been phased out of service in favor of the later FOXTROT class. Several modifications were made, including the ZULU V, armed with two SS-N-4 ballistic missiles. Two of these early SSBs are in service as oceanographic survey submarines.

AVIATION SHIPS

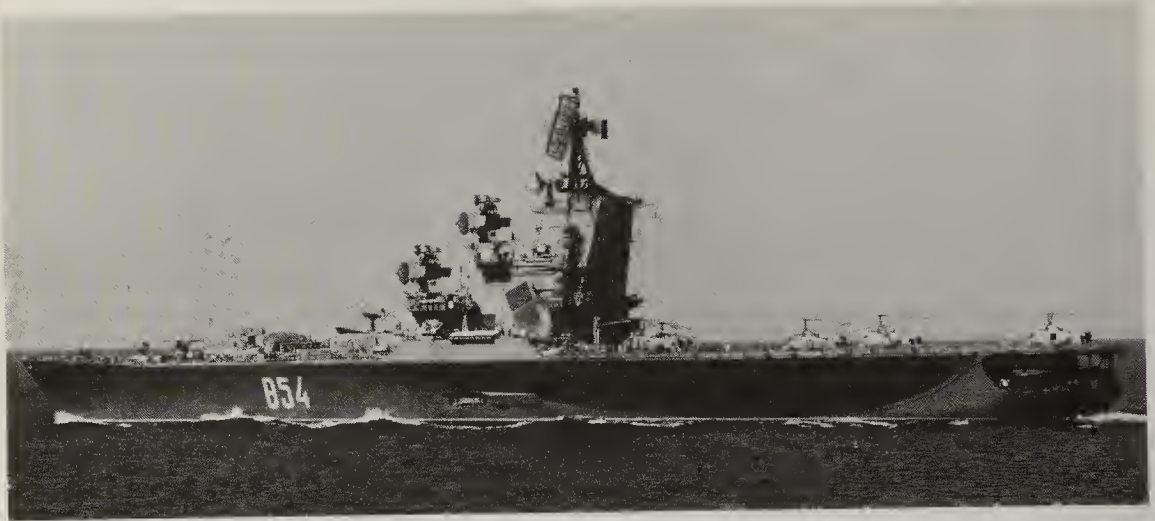


MINSK anti-submarine aircraft carrier

Guided Missile Anti-Submarine Aircraft Carriers (CVSG): KIEV* Class

Displacement:	37,000 tons
Length:	270 meters (900 feet)
Propulsion:	steam turbines, over 30 knots
Main Armament:	4 twin SS-N-12 SSM launchers 2 twin SA-N-3 SAM launchers (GOBLET) 2 twin SA-N-4 SAM launchers 1 twin SUW-N-1 ASW launcher 4 76-mm DP guns (2 twin mounts)
Aircraft:	approx 35 YAK-36 FORGER VSTOL aircraft and KA-25 HORMONE helicopters

The KIEV is the largest naval ship yet built in the Soviet Union. The first unit became operational in 1976 and at least two additional ships are in the class, MINSK and KHARKOV. This ship is considered the first Soviet "aircraft carrier," having the flexibility to deploy a mix of fixed and rotary-wing aircraft for a number of missions. Weapons include eight surface-to-surface cruise missile tubes, two twin SA-N-3 and two SA-N-4 SAM launchers, two 76-mm twin gun mounts, and eight "Gatling" guns. For ASW the ship has a twin anti-submarine missile launcher, two anti-submarine rocket launchers, and probably torpedo tubes as well as hull-mounted and variable-depth sonars. The KIEV features a starboard "island" superstructure and an angled flight deck. The lack of catapults and arresting gear limits the KIEV to operating helicopters and Vertical/Short Take Off and Landing (VSTOL) aircraft. Aircraft observed aboard KIEV to date are the FORGER-A and -B VSTOL aircraft, and the HORMONE-A and -B helicopters. It is estimated the ship can carry 30 to 35 aircraft depending on the mix of VSTOL aircraft and helicopters embarked.



MOSKVA guided missile helicopter cruiser

Guided Missile Helicopter Cruisers (CHG): MOSKVA * Class

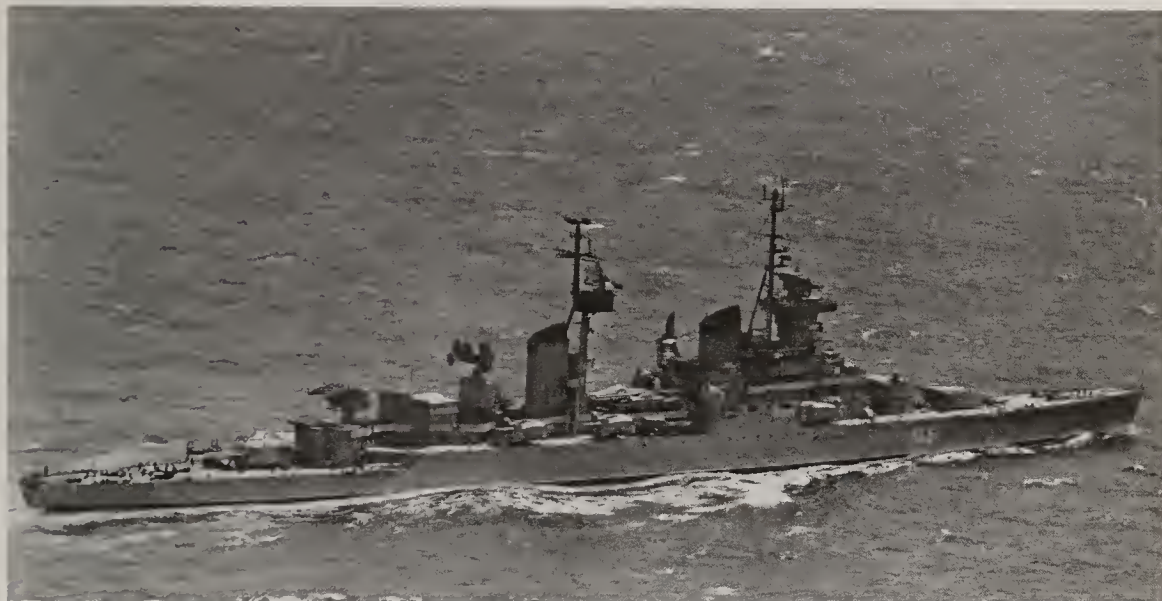
Displacement:	17,000 tons full load
Length:	190 meters (623 feet)
Propulsion:	steam turbines, 30 knots
Main Armament:	2 twin SA-N-3 SAM launchers (GOBLET) 1 twin SUW-N-1 ASW launcher 4 57-mm AA guns (2 twin mounts)
Aircraft:	18 KA-25 HORMONE helicopters

The MOSKVA and the LENINGRAD of this class were completed in 1967 and 1968, respectively. The unique design of the ships includes a guided missile cruiser configuration forward and helicopter deck aft. There is a hangar deck below the flight deck which is serviced by two aircraft elevators. The MOSKVA weapons suit includes twin anti-aircraft and anti-submarine missile launchers, anti-submarine rockets, and torpedo tubes. The ships have hull-mounted and variable-depth sonars. They can carry 18 HORMONE helicopters, with most or all normally configured for ASW.



Fleet oiler BORIS CHILIKIN refueling the helicopter carrier MOSKVA

SURFACE COMBATANTS

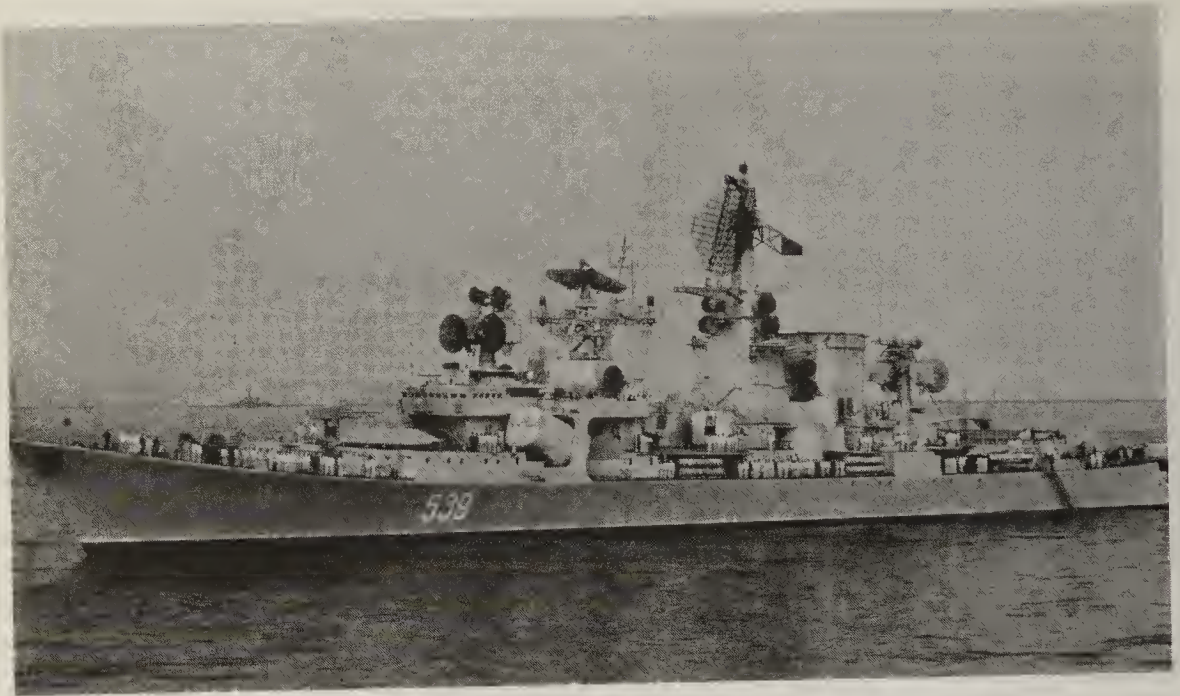


DZERZHINSKI guided missile cruiser

Guided Missile Cruiser (CG): DZERZHINSKI*

Displacement:	17,000 tons full load
Length:	210 meters (689 feet)
Propulsion:	steam turbines, 32 knots
Main Armament:	1 twin SA-N-2 SAM launcher (GUIDELINE)
	9 6-inch (152-mm) guns (3 triple turrets)
	12 100-mm DP guns (6-twin mounts)

The DZERZHINSKI was originally a SVERDLOV-class light cruiser armed with twelve 152-mm guns. The ship was converted in 1961 to the first Soviet guided missile cruiser by removal of the third 152-mm turret and installation of the GUIDELINE SAM system, including associated radars and fire control. The GUIDELINE, adopted from a ground-launched missile, was apparently not successful in this naval application as no additional ships were fitted with the system. The DZERZHINSKI remains in service, but is not considered to be a first-line SAM ship.



NIKOLAYEV, a guided missile cruiser

Guided Missile Cruisers (CG): KARA Class

Displacement:	9,700 tons full load
Length:	175 meters (574 feet)
Propulsion:	gas turbines, 32 knots
Main Armament:	8 SS-N-14 ASW missiles
	2 twin SA-N-3 SAM launchers (GOBLET)
	2 twin SA-N-4 SAM launchers
	4 76-mm DP guns (2 twin mounts)
Aircraft:	1 KA-25 HORMONE helicopter

The KARA is the latest in the line of Soviet guided missile cruiser classes. This is a highly capable, heavily armed warship, first seen at sea in 1973. The KARA weapons consist of eight tubes for the SS-N-14 anti-submarine missile, ten torpedo tubes, and anti-submarine rocket launchers plus anti-aircraft guns and surface-to-air missiles. A helicopter hangar and platform are fitted aft. Six ships of this class are currently operational with construction of additional units continuing.



KRESTA I guided missile cruiser

Guided Missile Cruisers (CG): KRESTA I Class

Displacement:	7,500 tons full load
Length:	155 meters (508 feet)
Propulsion:	steam turbines, 32 knots
Main Armament:	4 SS-N-3 SSMs 2 twin SA-N-1 SAM launchers (GOA) 4 57-mm AA guns (2 twin mounts)
Aircraft:	1 KA-25 HORMONE helicopter

The KRESTA I cruiser is slightly smaller than the KRESTA II. It is a versatile and heavily armed ship with anti-ship cruise missile tubes, two anti-aircraft missile launchers, guns, ten torpedo tubes, anti-submarine weapons, and a helicopter platform with hangar. The KRESTA I was the first Soviet combatant to have a helicopter hangar. Four units of this class were completed prior to development of the KRESTA II follow-on design. One ship has been fitted with four rapid-fire "Gatling" guns.



KRESTA II guided missile cruiser

Guided Missile Cruisers (CG): KRESTA II Class

Displacement:	7,500 tons full load
Length:	160 meters (524 feet)
Propulsion:	steam turbines, 32 knots
Main Armament:	8 SS-N-14 ASW missiles 2 twin SA-N-3 SAM launchers (GOBLET) 4 57-mm AA guns (2 twin mounts)
Aircraft:	1 KA-25 HORMONE helicopter

The first KRESTA II cruiser became operational about 1970. These ships are armed with eight tubes for the SS-N-14 anti-submarine missile, twin anti-aircraft missiles, four 57-mm AA and four "Gatling" anti-aircraft guns, ten torpedo tubes, anti-submarine weapons, and a helicopter platform with hangar. Ten ships of this class have been built.



KYNDA guided missile cruiser

Guided Missile Cruisers (CG): KYNDA Class

Displacement:	5,500 tons full load
Length:	140 meters (459 feet)
Propulsion:	steam turbine, 34 knots
Main Armament:	8 SS-N-3 SSM tubes 1 twin SA-N-1 SAM launcher (GOA) 4 76-mm AA guns (2 twin mounts)

The four KYNDA-class cruisers, first operational in 1962, were the first of the Soviet missile cruisers. When introduced, this cruiser class was unique in carrying anti-ship missiles rather than anti-aircraft missiles as the main battery. Anti-submarine weapons are also provided as well as a helicopter landing area (no hangar). The KYNDA is the only Soviet cruiser with reloads for the anti-ship missile tubes (eight reloads are carried in the superstructure).



OKTYABRSKAYA REVOLUTSIYA, a cruiser of the SVERDLOV class

Light Cruisers (CL/CLC): SVERDLOV* Class

Displacement:	17,000 tons full load
Length:	210 meters (689 feet)
Propulsion:	steam turbines, 32 knots
Main Armament:	SA-N-4 SAM launchers in ADMIRAL SENYAVIN and ZHDANOV 12 6-inch (152-mm) guns (4 triple turrets) except 6 guns in ADMIRAL SENYAVIN and 9 guns in ZHDANOV

Fourteen of these large, light cruisers were built during the early 1950s. Subsequently, one ship was stricken following being used as a missile test platform and another was transferred to Indonesia (also later scrapped). In the early 1960s, one SVERDLOV, the DZERZHINSKIY,* was converted to a guided missile cruiser (CG); that ship is listed separately.

Two SVERDLOVs, the ADMIRAL SENYAVIN* and ZHDANOV,* were converted to a command ship configuration (CLC) in the early 1970s. These ships are fitted with staff accommodations and elaborate communications equipment. Some 152-mm guns were removed and helicopter facilities, an SA-N-4 SAM launcher, and several 30-mm anti-aircraft guns were installed. Thus modified, these ships can serve as flagships in command of naval formations.

Their armament originally included 12 152-mm guns and 12 100-mm guns, up to 32 37-mm AA guns, ten torpedo tubes, and mine rails. Six or seven SVERDLOVs remain in service as all-gun cruisers plus the two command ships.



KANIN guided missile destroyer

Guided Missile Destroyers (DDG): KANIN Class

Displacement:	4,800 tons full load
Length:	140 meters (460 feet)
Propulsion:	steam turbines, 35 knots
Main Armament:	1 twin SA-N-1 SAM launcher
	8 57-mm AA guns (2 quad mounts)

The program to convert KRUPNYY-class destroyers to the KANIN class is apparently completed. The KANIN destroyer is primarily an anti-submarine ship, with a significant anti-aircraft capability. The ship design consists of the basic KRUPNYY destroyer hull and engineering plant armed with anti-aircraft guns and missiles, ten anti-submarine torpedo tubes, anti-submarine rocket launchers, and a helicopter platform. Eight ships of this class are currently operational.



Modified KASHIN guided missile destroyer

Guided Missile Destroyers (DDG): KASHIN Class

Displacement:	4,500 tons full load
Length:	145 meters (476 feet)
Propulsion:	gas turbines, over 35 knots
Main Armament:	2 twin SA-N-1 SAM launchers (GOA)
	4 improved SS-N-2 SSMs (STYX) in some ships
	4 76-mm DP guns (2 twin mounts)

The KASHIN was the world's first large gas-turbine propelled warship. The armament consists of two anti-aircraft missile launchers, dual-purpose guns, five torpedo tubes, mine rails; anti-submarine rockets, and a helicopter landing pad (no hangar). Several ships of the MOD KASHIN class have been provided improved anti-air, anti-submarine, and anti-ship capabilities over the basic KASHIN class. The MOD ships are additionally armed with four launchers for SS-N-2 STYX-type missiles and "Gatling" anti-aircraft guns. Additional ships will probably be modified. Since the first unit was completed in 1962, 20 ships of the KASHIN have been built. One KASHIN suffered an internal explosion and sank in the Black Sea in August 1974. Nineteen ships remain operational.



Modified KILDIN guided missile destroyer

Destroyers (DD): MOD KILDIN Class

Displacement:	3,500 tons full load
Length:	126 meters (413 feet)
Propulsion:	steam turbines, 34 knots
Main Armament:	4 improved SS-N-2 SSMs (STYX)
	4 76-mm DP guns (2 twin mounts)
	16 57-mm AA guns (4 quad mounts)

Three of the original four KILDIN-class destroyers have undergone extensive modification. Their new armament includes four STYX-type missile tubes and two 76-mm twin gun mounts aft in place of the SS-N-1 missile launcher originally installed. Four torpedo tubes are also provided.



KOTLIN destroyer

Destroyers (DD): KOTLIN Class

Displacement:	3,500 tons full load
Length:	125 meters (410 feet)
Propulsion:	steam turbines, 34 knots
Main Armament:	4 5.1-in (130-mm) guns (2 twin mounts)

Twenty-seven of the fast, general purpose KOTLIN-class destroyers were built during the 1950s. Nine of these have since been converted to SAM KOTLIN DDGs and 11 were modernized to MOD KOTLIN status. No further conversions or modifications of the remaining standard KOTLIN DDs are anticipated. Although these ships possess heavy conventional and torpedo armament (ten tubes), they have marginal anti-submarine and anti-aircraft capabilities for modern threats. The original KOTLIN DD armament consisted of four 5.1 inch guns, sixteen 45-mm and four 25-mm AA guns, ten torpedo tubes, anti-submarine weapons, and mine rails. Most of these ships are still in active Soviet service.

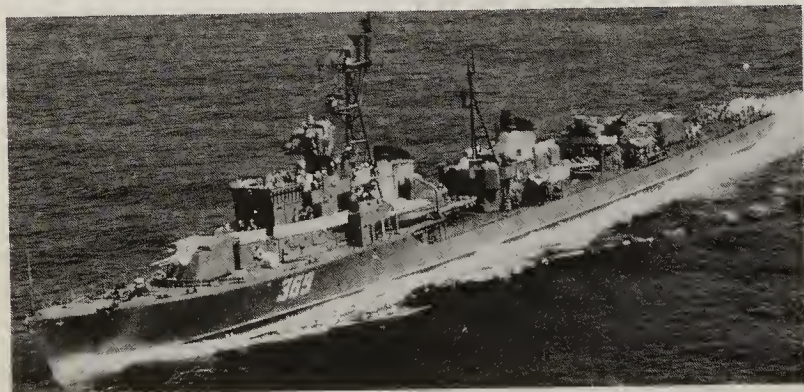


SAM KOTLIN guided missile destroyer

Guided Missile Destroyer (DDG): SAM KOTLIN Class

Displacement:	3,500 tons full load
Length:	125 meters (410 feet)
Propulsion:	steam turbines, 34 knots
Main Armament:	1 twin SA-N-1 SAM launcher (GOA) 2 5.1-inch (130-mm) guns (1 twin mount)

The SAM KOTLIN was the first Soviet combatant to carry an anti-aircraft missile system. In addition to a twin SAM launcher, the SAM KOTLIN has a twin 5.1-inch mount and light AA guns, five torpedo tubes, and anti-submarine weapons.



SKORYY destroyer

Destroyers (DD): SKORYY Class

Displacement:	3,200 tons full load
Length:	125 meters (410 feet)
Propulsion:	steam turbines, 33 knots
Main Armament:	4 5.1-inch (130-mm) guns (2 twin mounts)

Seventy-two ships of the SKORYY class were completed from 1949 to 1953. This was the first post-World War II destroyer construction program and numerically the largest destroyer class built in the Soviet Union. The SKORYY was armed originally with four 5.1-inch guns, two 85-mm AA guns, seven or eight 37-mm AA guns, and ten torpedo tubes plus mine rails, and anti-submarine weapons. The Modified SKORYY configurations received improved anti-air and anti-submarine weapons. About 20 SKORYY units remain in service in the Soviet Navy with others in reserve. Although 16 SKORYY destroyers have been transferred to Egypt, Poland, and Indonesia, only four Egyptian units are now active in foreign service.



KRIVAK frigate

Frigates (FFG): KRIVAK Class

Displacement:	3,600 tons full load
Length:	125 meters (410 feet)
Propulsion:	gas turbines, 31 knots
Main Armament:	4 SS-N-14 ASW missiles
	2 twin SA-N-4 SAM launchers
	4 76-mm AA guns (2 twin mounts) or
	2 100-mm DP guns (2 single mounts)

The KRIVAK-class ships are among the most heavily armed frigates afloat. These are primarily anti-submarine ships with hull-mounted and variable-depth sonars, and ASW missiles, rockets and torpedo tubes. The KRIVAK became operational in 1970; a total of 22 units are operational with construction of additional ships continuing. In 1978 these ships were reclassified as frigates (FFG) from destroyers.



MIRKA II frigate

Frigates (FFL): MIRKA I/II Classes

Displacement:	1,150 tons full load
Length:	83 meters (272 feet)
Propulsion:	combination diesel/gas turbine, 30 knots
Main Armament:	4 76-mm AA guns (2 twin mounts)

The MIRKA class, similar to the PETYA-class FFL, is a small, fast combatant armed with 76-mm guns, torpedo tubes, and anti-submarine rocket launchers. Nine of the 20 MIRKAs that have been built have two banks of five torpedo tubes and no ASW rocket launchers aft and are designated the MIRKA II class.

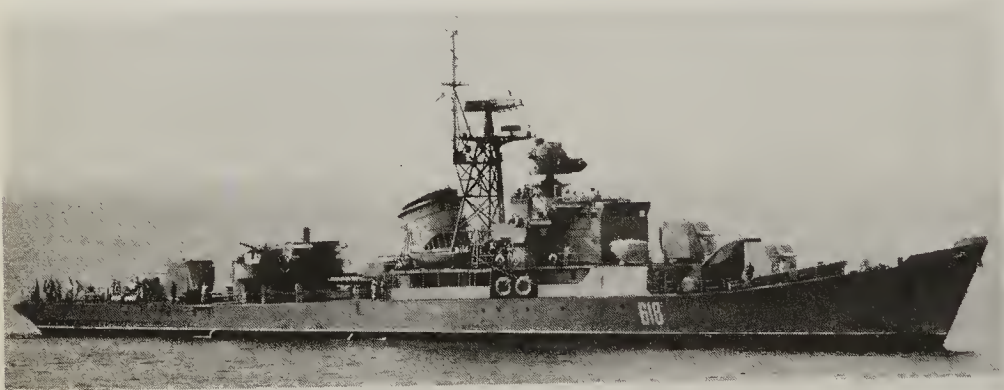


PETYA II frigate

Frigates (FFL): PETYA I/II Classes

Displacement:	1,140 tons full load
Length:	82 meters (269 feet)
Propulsion:	combination diesel/gas turbines, 29 knots
Main Armament:	4 76-mm AA guns (2 twin mounts)

The PETYA class of small frigates is designed primarily for coastal defense, although they operate regularly in the Mediterranean and often in more-distant areas. The older PETYA I units became operational in 1960. They are equipped with two 76-mm twin gun mounts, one five-tube torpedo mount, and anti-submarine rocket launchers. The improved PETYA II units have two sets of five torpedo tubes and two anti-submarine rocket launchers. Of the 23 PETYA I's built, some have been modified to carry variable-depth sonar and have been designated Modified PETYA I class. About 65 PETYAs have been built, with some units having been transferred to India and Syria.



RIGA frigate

Frigates (FF): RIGA Class

Displacement:	1,320 tons full load
Length:	91 meters (298 feet)
Propulsion:	steam turbines, 28 knots
Main Armament:	3 100-mm DP guns (3 single mounts)
	4 37-mm AA guns (2 twin mounts)

An estimated 64 RIGA-class frigates were built from 1952 through 1958. The approximately 35 units still active in the Soviet Navy have been given improved anti-submarine capabilities with the addition of ASW rocket launchers. The RIGA is equipped with 100-mm and 37-mm guns, and a triple tube torpedo mount. Ships of this class have been transferred to Bulgaria, East Germany, Finland, and Indonesia.



Frigates (FF): KONI Class

Displacement:	approx. 2,000 tons full load
Length:	96 meters (320 feet)
Propulsion:	combination diesel/gas turbine, approx. 30 knots
Main armament:	1 twin SA-N-4 SAM launcher
	4 76-mm AA guns (2 twin mounts)
	4 30-mm AA guns (2 twin mounts)

The KONI-class frigates have been completed from 1977 onward. They are fitted with ASW rocket launchers, but lack the torpedo tubes of other principal Soviet ASW ships indicating that these ships are primarily coastal patrol or "guard ships." The KONI class may be intended to replace the older RIGA and KOLA classes.

SMALL COMBATANTS

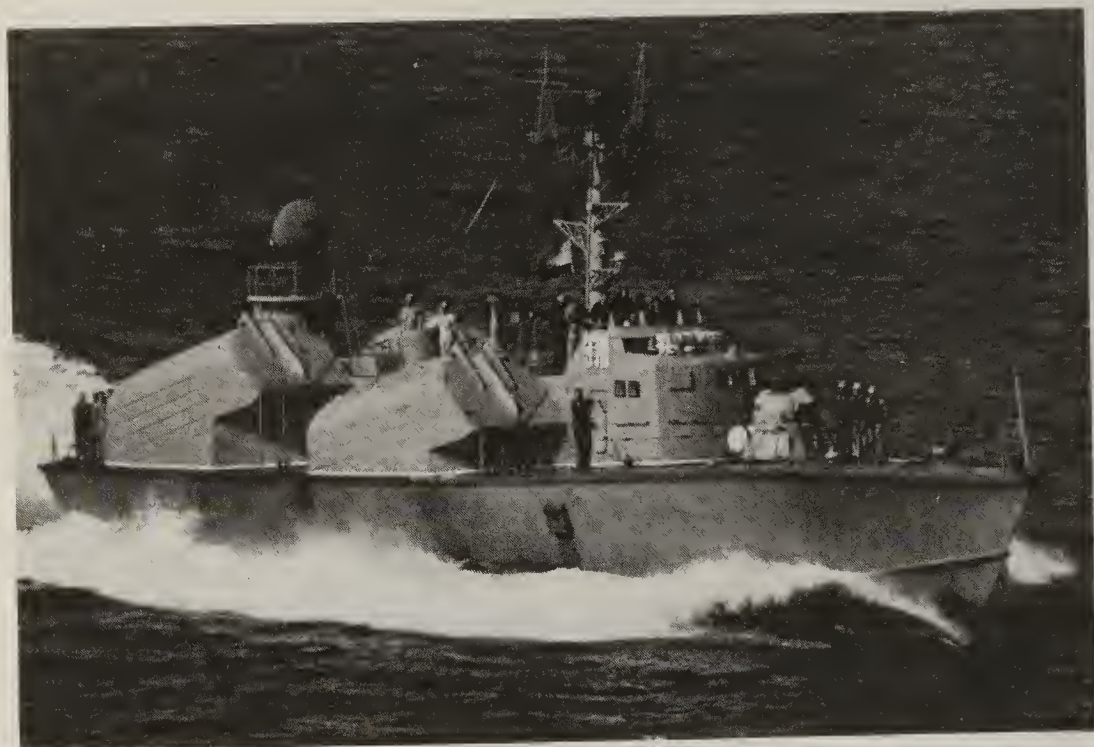


NANUCHKA guided missile patrol boat

Guided Missile Patrol Ships (PGG): NANUCHKA Class

Displacement:	950 tons full load
Length:	70 meters (229 feet)
Propulsion:	diesels, over 30 knots
Main Armament:	6 SS-N-9 SSMs
	1 twin SA-N-4 SAM launcher
	2 57-mm AA guns (1 twin mount)

The NANUCHKA is the largest of the Soviet guided missile patrol combatants. The class was designed for improved endurance and better sea-keeping qualities than earlier missile craft. The NANUCHKA armament includes six SS-N-9 anti-ship cruise missiles with a range of about 90 kilometers (60 nautical miles). Significant defensive weapons are also provided. The first NANUCHKA was completed in 1969; construction continues with some 15 units having been completed. Two modified NANUCHKAs have been delivered to India.



OSA guided missile patrol boat operated by the Egyptian Navy

Guided Missile Patrol Boats (PTG): OSA I/II Classes

Displacement:	200 tons full load
Length:	40 meters (131 feet)
Propulsion:	diesels; 34 knots
Main Armament:	4 SS-N-2 STYX SSMs
	4 30-mm AA guns (twin)

The OSA is, numerically, the largest class of guided missile boats in the Soviet Navy with some 120 units currently operational. OSA-class missile boats are larger follow-ons to the KOMARs, of which only a few survive in Soviet service. OSAs are fitted with four STYX-type (SS-N-2) anti-ship cruise missile tubes plus 30-mm AA guns. Indian-manned OSAs sank one Pakistani destroyer and severely damaged a second in the 1971 Indo-Pakistani War; they were also thought responsible for the sinking of several merchant ships. Over 100 of the OSA-class missile boats have been transferred to other countries, including China (PRC), Cuba, Egypt, Libya, East Germany, India, Poland, Romania, Syria, Yugoslavia, Iraq, Finland, Algeria, Bulgaria, North Korea, and Somalia. The OSA II units have an improved SS-N-2 missile.

AMPHIBIOUS SHIPS



ALLIGATOR tank landing ship

Tank Landing Ships (LST): ALLIGATOR Class

Displacement:	4,500 tons full load
Length:	113 meters (371 feet)
Propulsion:	diesels, 16 knots
Main Armament:	2 57-mm AA guns (1 twin mount)

The ALLIGATOR is a landing ship with a tank deck and bow doors. LSTs are used to transport Naval Infantry units with their equipment and vehicles. Fourteen ships of this class have been completed since 1966.

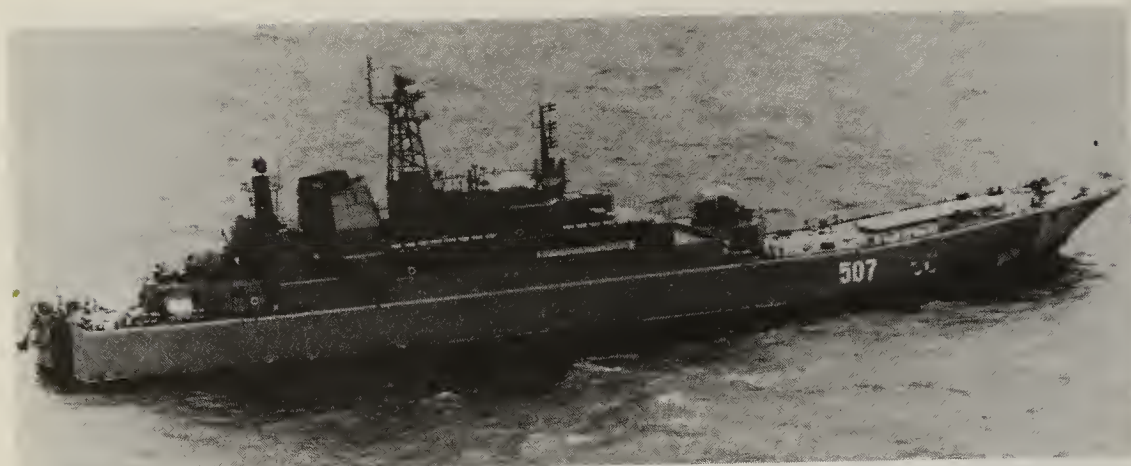


POLNOCNY medium landing ship

Medium Landing Ships (LSM): POLNOCNY Class

Displacement:	800 tons full load
Length:	75 meters (246 feet)
Propulsion:	diesels, 18 knots
Main Armament:	several 30-mm AA guns (twin mounts)

The POLNOCNYs are Polish-built medium landing ships. About 60 ships are currently in the Soviet naval service plus more than 20 in the Polish Navy; other units have been transferred to Algeria, Egypt, Indonesia, India, Iraq, Somalia, and South Yemen. Several variations exist within the general POLNOCNY class with different bridge configurations, armament, and payloads. Most ships are armed with 30-mm AA guns and multi-barrel shore bombardment rocket projectors.



ROPUCHA tank landing ship

Tank Landing Ships (LST): ROPUCHA Class

Displacement:	3,400 tons full load
Length:	113 meters (371 feet)
Propulsion:	diesels, 16 knots
Main Armament:	4 57-mm AA guns (2 twin mounts)

The ROPUCHA-class LSTs, currently being built for the USSR in Poland, are a new design representing a major addition to the Soviet amphibious ship inventory. This new LST can carry a balanced troop and vehicle load, including tanks.



Amphibious Assault Ships (LPD): IVAN ROGOV Class

Displacement:	approx. 13,000 tons full load
Length:	153.6 meters (512 feet)
Propulsion:	steam turbines, approx. 20 knots
Main armament:	2 76-mm AA guns (1 twin mount) 8 30-mm AA guns (4 twin mounts)

Completed in 1978, the IVAN ROGOV is the first of a series of large amphibious ships, several times larger than the previous ROPUCHA class. Assault features include helicopter flight decks forward and aft of the superstructure, a bow ramp opening into a vehicle deck, a stern docking well that can accommodate three air cushion vehicle landing craft, and launchers for shore bombardment rockets. About 500 troops can be carried.

Appendix D. SOVIET AIRCRAFT DESCRIPTIONS

The combat capabilities of Naval Aviation are one of the main indicators of the striking power of our modern Navy. Naval Aviation has become truly oceanic in nature, and it has been transformed into a most important naval warfare resource.

*Admiral of the Fleet of the Soviet Union
S.G. GORSHKOV*

This appendix provides basic descriptive data and photographs of the more significant Soviet naval aircraft. For more detailed and comprehensive data see the classified publication *Aircraft Handbook: European Communist Countries (U)* (ST-HB09-5-74).

Arrangement: Aircraft are arranged alphabetically by NATO code name.

Classification: The dimensions, characteristics, and general information contained in this appendix are approximate and unclassified. All photography in this appendix is unclassified and may be ordered through appropriate Navy channels.

Designations: All aircraft names given in this appendix are NATO code names: "B" names prefix Bomber aircraft; "F" names prefix Fighter aircraft; "M" names prefix Miscellaneous aircraft, including maritime reconnaissance/patrol aircraft; and, "H" names prefix Helicopters. One-syllable names denote propeller driven aircraft and two-syllable names are used for jet aircraft. The Soviet designation scheme, which uses letters derived from the name(s) of the aircraft designer (e.g., MIG, TU, KA) and sequential numbers, provides a universal designation basis for Soviet aircraft.

STRIKE/BOMBER AIRCRAFT



BACKFIRE strike bomber

BACKFIRE

Length:	42 meters (140 feet)
Wingspan:	swept 24 meters (80 feet) extended 34 meters (110 feet)
Engines:	2 turbofan
Maximum speed:	approx 1,100 knots

The BACKFIRE is currently the only Soviet bomber aircraft in production. Over 50 BACKFIRE-B aircraft, the operational model, are deployed in Soviet Naval Aviation. They can carry air-to-surface cruise missiles, probably of the AS-4 type. The role for these variable-geometry (swing) wing bombers in SNA is missile strike against carrier task forces and other high value targets. As additional aircraft are produced, reconnaissance and electronic warfare may be added missions of their roles. BACKFIREs are also flown by Soviet Long-Range Aviation.



BADGER reconnaissance aircraft

TU-16 BADGER

Length:	38 meters (125 feet)
Wingspan:	33 meters (110 feet)
Gross Weight:	170,000 lbs
Engines:	2 turbojets
Maximum speed:	540 knots

The BADGER twin-turbojet medium bomber is employed by Soviet Naval Aviation in anti-ship, reconnaissance, electronic warfare, and tanker roles. The most numerous aircraft type in Soviet Naval Aviation, there are currently over 400 BADGERS in service. BADGER-C and -G variants are armed with stand-off missiles for anti-ship strike; BADGER-A bombers, which carry only gravity (free-fall) bombs, are probably employed primarily for training; about 80 BADGER-A aircraft are configured as tankers for in-flight refueling of strike and reconnaissance aircraft; and about 70 BADGERS are employed in reconnaissance and electronic roles. BADGERS also are flown by Soviet Long-Range Aviation and the air arms of China (PRC) Egypt, Indonesia, and Iraq.



BEAR maritime surveillance/reconnaissance aircraft

TU-95 BEAR

Length:	45 meters (147 feet)
Wingspan:	50 meters (165 feet)
Gross Weight:	356,000 lbs
Engines:	4 turboprop (counter-rotating propellers)
Maximum speed:	500 knots

The TU-95 BEARs are the largest Soviet naval aircraft. Almost 50 of the BEAR-D variant are flown in the maritime surveillance/reconnaissance role and there are also about 25 BEAR-F anti-submarine variants in service. Like other Soviet aircraft of this category, BEAR-Ds can provide cruise missile guidance information to aircraft, surface ship, and submarine launch platforms. The BEAR-D has an unrefueled range of approximately 15,000 kilometers (8,000 nautical miles); naval BEARs have flown from bases in the Murmansk area around the North Cape, down the Norwegian Sea, and across the Atlantic Ocean, to land in Cuba or Guinea. BEAR-Ds have also been deployed to Somalia and Angola, with some having flown reconnaissance missions along the U.S. east coast. BEAR-A, B, C, and E variants are flown by Soviet Long-Range Aviation and are occasionally exercised in maritime strike roles.



BLINDER medium bomber flown by the Libyan Air Force

TU-22 BLINDER

Length:	40 meters (133 feet)
Wingspan:	24 meters (80 feet)
Gross Weight:	185,000 lbs
Engines:	2 turbojets
Maximum speed:	1,000 knots

The TU-22 BLINDER twin-turbojet medium bomber is employed by the Soviet Navy in both attack and reconnaissance roles. There are about 50 BLINDER-A aircraft in naval service which carry gravity bombs and a few BLINDER-Cs configured for reconnaissance. These aircraft have a supersonic dash capability. BLINDERS are also flown by Soviet Long-Range Aviation, as well as the air forces of Iraq and Libya.

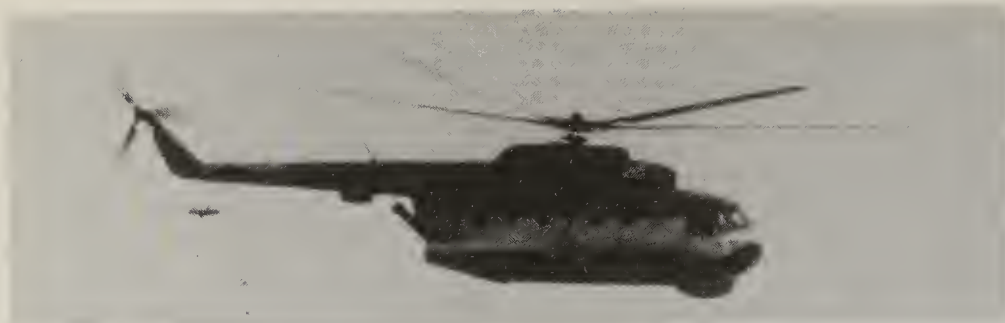


FORGER VSTOL fighter/attack aircraft

YAK-36 FORGER

Length:	15 meters (50 feet)
Wingspan:	7 meters (23 feet)
Gross Weight:	22,000 lbs
Engines:	2 lift-only turbines and 1 lift/cruise turbine
Maximum speed:	transonic

The YAK-36 FORGER is a VSTOL (Vertical/Short Take-Off and Landing) aircraft first deployed in mid-1976 on the Soviet carrier KIEV. The aircraft uses both the lift-only and the lift/cruise engines in vertical flight and while transitioning into horizontal flight. The lift-only engines are shut down during normal flight. The FORGER's four wing stations are believed to be capable of mounting a variety of weapons including air-to-air missiles, rocket pods, machine guns, bombs, and tactical air-to-surface missiles, as well as auxiliary fuel tanks. While the exact role of FORGER has not been determined, it appears suitable for a wide range of missions such as air defense, close air support, reconnaissance, and anti-ship strike. The FORGER-B is a two-seat, combat-capable trainer version of the FORGER. Initially the FORGER was seen operating only in the VTOL mode, although it may also be capable of VSTOL flight.



HAZE anti-submarine helicopter

MI-14 HAZE

Length (fuselage):	18 meters (60 feet)
Rotor Diameter:	21 meters (70 feet)
Gross Weight:	24,000 lbs
Engines:	2 turboshafts
Maximum speed:	135 knots

The HAZE, an amphibious anti-submarine warfare helicopter, was adapted from the twin turbine MI-8 HIP-C transport helicopter. The rotary-wing aircraft has been observed in the Baltic Sea area with Magnetic Anomaly Detection (MAD) equipment and dipping sonar. Operational since 1975, more than a dozen of these new helicopters are believed to have entered operational service through 1977. It may be the eventual replacement for the shore-based HOUND ASW helicopters. In its present configuration, the HAZE is not suitable for operation from ships.



HORMONE-B helicopter

KA-25 HORMONE

Length (fuselage):	10 meters (32 feet)
Rotor diameter:	16 meters (52 feet)
Gross weight:	16,000 lbs
Engines:	2 turboshafts (counter-rotating main rotors)
Maximum speed:	130 knots

The HORMONE is the Soviet Navy's standard shipborne helicopter and is embarked in the KRESTA I and II, and KARA classes of missile cruisers, and the MOSKVA and new KIEV classes of aviation ships. The helicopters are configured for anti-submarine warfare (HORMONE-A) or missile guidance (HORMONE-B). The latter helicopters are embarked in ships with anti-ship cruise missiles. About 200 HORMONES are currently active in the Soviet Navy. Distinctive features of this ungainly looking helicopter are a chin-mounted radome, internal weapons bay for torpedoes or depth charges, two counter-rotating rotors, dipping sonar, and an optical sensor.



HOUND anti-submarine helicopter

MI-4 HOUND

Length:	17 meters (55 feet)
Rotor diameter:	21 meters (69 feet)
Gross weight:	17,200 lbs
Engines:	1 piston engine
Maximum speed:	115 knots

The HOUND helicopter has been in Soviet military service since the early 1950s, although it was not operational in the Navy until 1959. Fewer than 100 units are used currently by the Soviet Navy in a shore based anti-submarine role. They have chin-mounted radar, dipping sonar, and a towed magnetic detector. The HOUND appears to be phasing out in favor of the HORMONE or HAZE. In addition to the HOUNDS in Soviet military service, many are used commercially and several foreign countries have HOUNDS in their military and commercial air services.



MAIL patrol/anti-submarine aircraft

BE-12 MAIL

Length:	30 meters (99 feet)
Wingspan:	29 meters (97 feet)
Gross Weight:	65,000 lbs
Engines:	2 turboprops
Maximum speed:	330 knots

Soviet Naval Aviation operates these amphibious aircraft in maritime reconnaissance and anti-submarine warfare roles. The MAIL has distinctive gull-shaped wings, an elongated nose radar dome, and a MAD antenna protruding from the tail. Its weapons are carried on underwing pylons and in a weapons bay in the after section of the hull. Torpedoes, mines, or depth charges can be carried.



MAY patrol/anti-submarine aircraft

IL-38 MAY

Length:	36 meters (118 feet)
Wingspan:	37 meters (123 feet)
Gross weight:	141,000 lbs
Engines:	4 turboprops
Cruise speed:	340 knots

Entering service in 1968, the MAY is used primarily for open ocean patrol and anti-submarine warfare. The aircraft was adapted from a commercial aircraft design (the IL-18 COOT) in the same manner that the U.S. Navy P-3 ORION was developed from the commercial ELECTRA aircraft. The MAY has a radome under the forward fuselage and a MAD antenna protruding from the tail; ASW torpedoes are carried in an internal weapons bay. The Soviet aircraft has expendable sonobuoys and non-acoustic sensors, as well as a computerized tactical evaluation capability. Endurance is reported to be 12 hours at a patrol speed of about 220 knots.

Appendix E. SOVIET NAVAL LEADERSHIP

Commander-in-Chief and Deputy
Minister of Defense

Admiral of Fleet of Soviet Union S.G. Gorshkov
b. 1910. Frunze Naval School 1931. CO escort ship BURUN 1932–1937? Com. destroyer brigade 1939–1941? Voroshilov Naval Academy 1941. Com. Azov Flotilla 1941–1942, 1943–1944. Com. Danube Flotilla 1944. Com. squadron in Black Sea 1945–1948. C/S Black Sea Fleet 1948–1951. Com. Black Sea Fleet 1951–1955. 1st Dep. CinC Soviet Navy 1955–1956. CinC Soviet Navy 1956–present. Candidate Central Committee CPSU 1956; Full Member 1961, 1966. HSU.

First Deputy Commander-in-Chief

Fleet Admiral N.I. Smirnov
b. 1917. Frunze Naval School. Served in submarines 1941–1957, including CO of submarine, C/S division, com. division, and C/S submarine formation. Staff positions in Black Sea and Baltic Fleets, and Soviet Navy headquarters 1959–1969 (C/S to Admiral Gorshkov during SEVER exercises in 1968 while Head, Operations Dept., Main Naval Staff). Commander Pacific Fleet 1969–1974. 1st Dep. CinC Soviet Navy 1974–present.

First Deputy Commander-in-Chief and
Chief of Main Naval Staff

Fleet Admiral G.M. Yegorov
b. 1918. Frunze Naval School 1941. Submarines in Baltic Fleet in World War II. C/S Northern Fleet 1965–1967. Dep. CinC/Dir. Combat Training Soviet Navy 1967–1971. Com. Northern Fleet 1972–1977. 1st Dep. CinC Soviet Navy 1977–present. Candidate Central Committee CPSU 1976. HSU.

Deputy Commander-in-Chief for
Combat Training

Admiral G.A. Bondarenko
C/S Pacific Fleet 1967–1973. Dep. CinC Soviet Navy (Combat Training) 1973–present.

Deputy Commander-in-Chief for
Naval Educational Institutions

Admiral V.V. Mikhaylin
b. 1915. Minesweepers and small craft in Northern, Pacific, Black Sea Fleets in World War II. Naval Academy 1953. CO cruiser KUIBYSHEV. General Staff Academy 1962. 1st Dep. Com. Baltic Fleet 1963–1967. Com. Baltic Fleet 1967–1976? Dep. CinC Soviet Navy (Educational Institutions 1976–present)

Deputy Commander-in-Chief for
Rear Services

Admiral L.V. Mizin
b. 1921. C/S Black Sea Fleet 1969–1971. 1st Dep.
Com. Baltic Fleet 1971–1974. Dep. CinC Soviet
Navy (Rear Services) 1974–present.

Deputy Commander-in-Chief for
Shipbuilding and Armaments

Engineer-Admiral P.G. Kotov
Dep. CinC Soviet Navy (Shipbuilding and Ar-
maments) 1966–present.

Deputy Commander-in-Chief

Vice Admiral A.M. Kosov
b. 1927. C/S Baltic Fleet 1972–1975. Com. Baltic
Fleet 1975–1978. Dep. CinC Soviet Navy
1978–present.

Deputy Commander-in-Chief

Engineer-Admiral V.G. Novikov
Dep. CinC 1970–present.

Chief of Political Admin.

Admiral V.M. Grishanov
b. 1911. Entered Navy in 1933. Served in Baltic
Fleet during Russo-Finish War. Military Political
Academy 1941. Served in Northern Fleet during
World War II. Chief Political Admin. Pacific Fleet
1947–1954? Chief Political Admin. Baltic Fleet
1956–1958. Chief Political Admin. Soviet Navy
1958–present. (Additionally Deputy Chief Main
Political Admin. Soviet Army and Navy)

Commander Naval Aviation

Colonel-General Aviation A.A. Mironenko
b. 1918. Naval Air School 1937–1940. Service in
Baltic Fleet aviation in World War II. Com. Fighter
Regiment 1943–1945. Naval Academy 1948. Dep.
Com. Pacific Fleet aviation 1954–1956. Com. Black
Sea Fleet aviation 1956–1972. C/S Soviet Naval
Aviation 1972–1975. Com. Soviet Naval Aviation
1975–present. HSU.

Chief Auxiliary Fleet and
Salvage-Sea Rescue Service

Rear Admiral S.P. Zuyenko
Chief Auxiliary Fleet and Salvage-Sea Rescue Ser-
vice 1975–present.

Chief of Main Directorate of
Navigation and Oceanography

Admiral A.I. Rassokho
b. 1914. Chief of Main Directorate of Navigation
and Oceanography 1964–present.

Chief of Personnel Directorate

Vice Admiral Yu. S. Bodarevskiy
Chief of Personnel Directorate 1973–present.

Baltic Fleet

Commander

Vice Admiral V.V. Sidorov
C/S Pacific Fleet 1974–1978. Com. Baltic Fleet
1978–present.

First Deputy Commander

Chief of Staff

Vice Admiral A.M. Kalinin
Chief of Staff Baltic Fleet 1976–present.

Deputy Commander for Rear Services

Rear Admiral P.P. Belous
C/S Caspian Flotilla 1971–1975? Dep. Com. Rear Services Baltic Fleet 1976–present.

Chief of Political Admin.

Vice Admiral N.I. Shablikov
b. 1923. 1st Dep. Chief Political Admin. Soviet Navy 1970–1972. Chief Political Admin. Baltic Fleet 1972–present.

Commander Naval Aviation

Lieutenant-General Aviation A.I. Pavlovskiy
Com. Pacific Fleet aviation 1971–1977? Com. Baltic Fleet aviation 1977–present.

Chief of Combat Training Department

Rear Admiral M.P. Kalashnikov
Chief Combat Training Baltic Fleet 1968–present.

Commander Kronshtadt Naval Base

Rear Admiral A.I. Skvortsov
Com. Kronshtadt Naval Base 1974–present.

Commander Leningrad Naval Base

Vice Admiral A.P. Mikhaylovskiy
Com. Leningrad Naval Base 1978–present.

Commander Riga Naval Base

Rear Admiral I.I. Verenikin
Com. Riga Naval Base 1975–present.

Commander Tallinn Naval Base

Rear Admiral L.K. Zarubin
Com. Tallinn Naval Base 1975–present.

Black Sea Fleet

Commander

Admiral N.I. Khovrin
b. 1922. Entered Navy in 1941. Makarov. Naval School 1942–1945. Com. cruiser 1955–? Naval Academy. Com. Cruiser Brigade in Pacific Fleet 1968–1970. 1st Dep. Com. Northern Fleet 1970–1973? Com. Black Sea Fleet 1974–present.

First Deputy Commander
and Chief of Staff

Vice Admiral V.I. Akimov
Com. squadron in Baltic Fleet in 1970s. C/S Black Sea Fleet 1977–present. 1st Dep. Com. Black Sea Fleet 1978–present.

First Deputy Commander

Vice Admiral V.A. Samoylov
1st Dep. Com. Black Sea Fleet 1973–present.

Chief of Political Admin.

Vice Admiral P.N. Medvedev
Chief Political Admin. Black Sea Fleet 1975–present.

Deputy Commander for Rear Services

Rear Admiral M.P. Bochkarev
Dep. Com. Rear Services Black Sea Fleet 1972–present.

Commander Naval Aviation

Lieutenant-General Aviation V.I. Voronov
Com. Black Sea Fleet aviation 1971–present.

Northern Fleet

Commander

Admiral V.N. Chernavin
Com. Northern Fleet 1977–present.

First Deputy Commander

Vice Admiral V.S. Kruglyakov
Com. squadron in Pacific Fleet in 1960s. Com. Vladivostok Naval Base 1972–1975? 1st Dep. Com. Northern Fleet 1976–present.

Chief of Staff

Chief of Political Admin.

Rear Admiral Yu I. Padorin
Chief Political Admin. Northern Fleet 1976–present.

Commander Naval Aviation

Lieutenant-General Aviation V.Y. Ruchkov
Staff Com. Soviet Navy aviation in 1970s. Com. Northern Fleet aviation 1976–present.

Deputy Commander for Rear Services

Rear Admiral V. Petrov
Dep. Com. Rear Services Northern Fleet 1978–present.

Deputy Commander

Rear Admiral Y.A. Il'chenko
Dep. Com. Northern Fleet 1974–present.

Assistant Commander

Rear Admiral Z.V. Yeremeyev
Asst. Com. Northern Fleet 1970–present.

Chief of Personnel Department

Rear Admiral V. Zuyev
Chief Personnel Dept. Northern Fleet 1977–present.

Pacific Fleet

Commander

Admiral V.P. Maslov
b. 1925. 1st Dep. Com. Pacific Fleet 1971–1974. Com. Pacific Fleet 1974–present. Candidate Central Committee CPSU, 1976.

First Deputy Commander

Vice Admiral E.N. Spiridonov
1st Dep. Com. Pacific Fleet 1975–present.

Chief of Staff

Vice Admiral Y.M. Kudel'kin
Com. Caspian Flotilla in 1970s. 1st Dep. Com. Baltic Fleet 1975–1976. C/S Pacific Fleet 1976–present.

Chief of Political Administration

Rear Admiral V.D. Sabaneyev
1st Dep. Chief Political Admin. of Soviet Navy 1974–1976. Chief Political Admin. Pacific Fleet 1976–present.

Commander Naval Aviation	<i>Major-General Aviation I. Portyanchenko</i> Com. Pacific Fleet aviation 1976–present.
Deputy Commander for Rear Services	<i>Rear Admiral M.A. Kosyachenko</i> Com. Vladivostok Naval Base in 1975–1977. Dep. Com. Rear Services Pacific Fleet 1977–present.
Assistant Commander	<i>Rear Admiral V. Ya. Korban</i> Asst. Com. Pacific Fleet 1976–present.
Chief of Combat Training Directorate	<i>Rear Admiral V.N. Perelygin</i> Chief Combat Training Pacific Fleet 1974–present.
Commander Vladivostok Naval Base	
Caspian Flotilla	
Commander	<i>Vice Admiral G.G. Kasumbekov</i> Com. Caspian Flotilla 1977–present.
First Deputy Commander	
Chief of Staff	<i>Rear Admiral V.M. Buynov</i> C/S Caspian Flotilla 1975–present.
Chief of Political Administration	<i>Rear Admiral R.N. Likhvonin</i> Chief Political Admin. Caspian Flotilla 1977– present.
Deputy Commander for Rear Services	<i>Captain 1/Rank V.N. Bashkin</i> Dep. Com. for Rear Services Caspian Flotilla 1973–present.
Deputy Commander	<i>Captain 1/Rank V.M. Zhuchkov</i> Dep. Com. Caspian Flotilla 1976–present.

Abbreviations

Admin.	Administration
Asst.	Assistant
b.	born
CinC	Commander-in-Chief
Co	Commanding Officer
Com.	Commander
CPSU	Communist Party of the Soviet Union
Dep.	Deputy
Dept.	Department
Dir.	Director
HSU	Hero of the Soviet Union

Glossary

AAW	Anti-Air Warfare
AGI	Intelligence collection ship
AS-(number)	U.S. designation for Soviet air-to-surface missile
ASUW	Anti-Surface Warfare
ASW	Anti-Submarine Warfare
C ³	Command, Control and Communications
CINC	Commander-in-Chief
ELINT	Electronic Intelligence
MIRV	Multiple Independently Targeted Re-entry Vehicle
MRV	Multiple Re-entry Vehicle
RO/RO	Roll-On/Roll-Off
SA-N-(number)	U.S. designation for Soviet naval surface-to-air missile
SAM	Surface-to-Air Missile
SESS	Space Event Support Ship
SLBM	Submarine-Launched Ballistic Missile
SLOC	Sea Lines of Communication
SNA	Soviet Naval Aviation
SS-N-(number)	U.S. designation for Soviet naval surface-to-surface or submarine-to-surface missile
SSB	Ballistic missile submarine
SSBN	Ballistic missile submarine (nuclear propelled)
VSTOL	Vertical and Short Take-Off and Landing (aircraft)



The BEREZINA is the first of a series of large Soviet underway replenishment ships similar in size to the US Navy's WICHITA-class replenishment oilers (AOR). Probably designed to support the KIEV-class carriers on long deployments, the BEREZINA is 685-feet long and her displacement is estimated to be 30 to 40,000 tons fully loaded. The BEREZINA was completed in 1978.

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YANKEE SSBN



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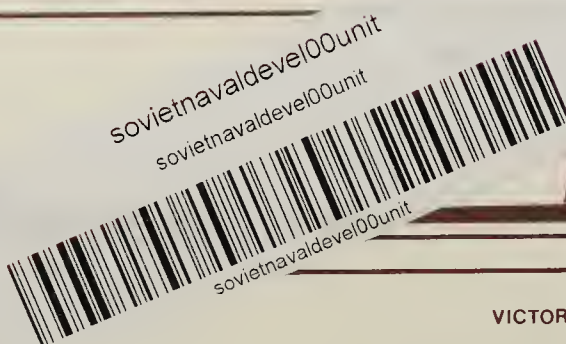
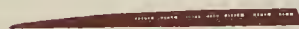


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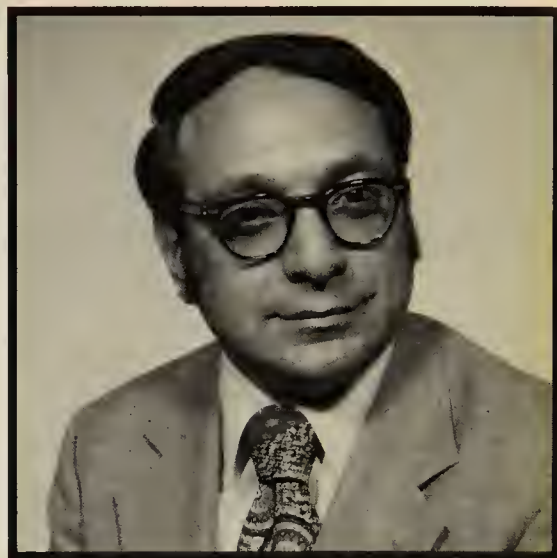


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